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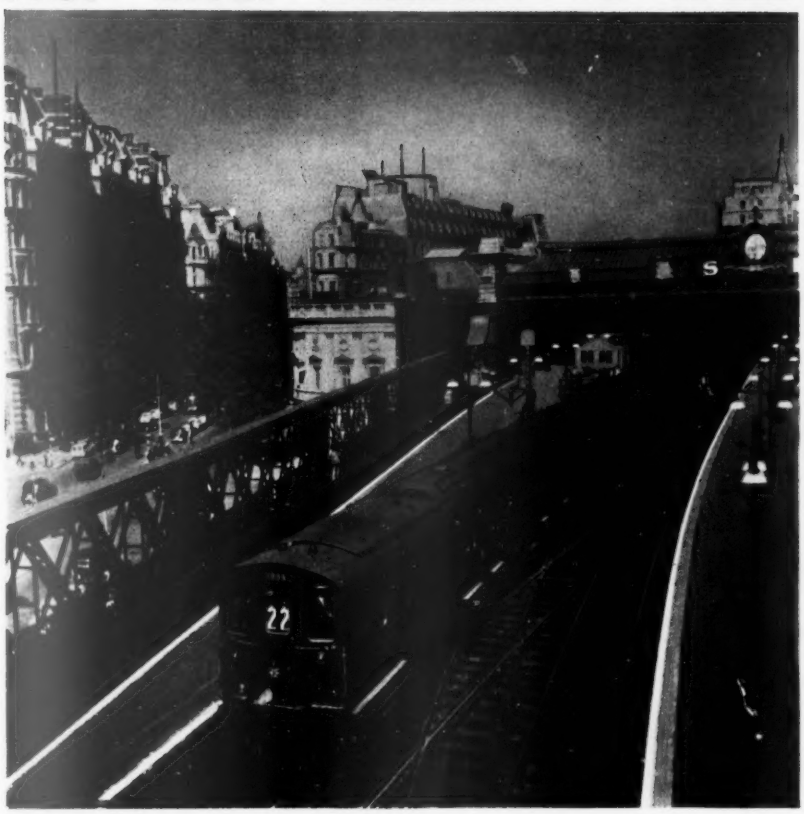

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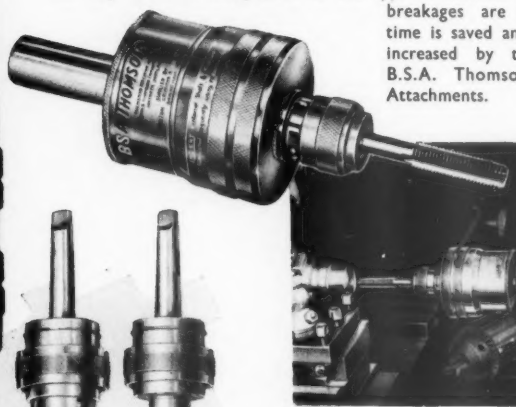

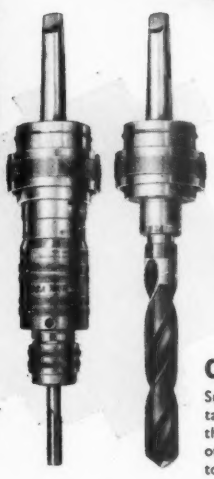

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New Year Honours

THE time has long since passed when Honours Lists could be counted on to contain the names of railway officers whose work merited recognition by a grateful State. Ever since the nationalisation of the railways the number of official recipients of honours has been very few, and many have been the comments on the relative values of the spheres of activity which receive official recognition. It would appear that there has evolved an entirely new set of values in matters of this kind. Members of the higher ranks of the Civil Service cannot, of course, be overlooked when honours are distributed, for they have become a part of the reward for the job and possibly a substitute for some part of the more generous remuneration which would be accorded to persons of similar position in industrial undertakings. The railway officer, however, seems to have been relegated to a somewhat difficult position for he is accorded neither the salary assimilated to the job he does or the responsibility he bears nor the official recognition of the value of his work to the community. The New Year Honours List sets a new standard in matters of this kind, for among the senior divisions of the orders there is no representative of British Railways who is deemed worthy of inclusion. One must assume, therefore, that the management and administration of the principal transport arteries of the country are not now held in such high regard as they were before the State took them unto itself. The State, therefore, can have no cause for complaint if the enthusiasm of those who conduct this one-time essential service should wane and if the difficulties of recruiting high calibre young men become even more pronounced than they are at present. Among transport undertakings which receive recognition, Mr. Gerald d'Erlanger, Chairman of British Overseas Airways Corporation, becomes a Knight Bachelor, and Mr. Keith Granville, the popular Commercial Director of B.O.A.C., has his outstanding efforts in recent years rewarded with a C.B.E. Mr. J. C. Jones, General Manager of the Central Railway of Paraguay, and Mr. T. V. Woods, General Manager of the Antofagasta-Bolivia Railway, also receive the C.B.E. In view of the paucity of members of the B.T.C. organisation among the honours, it is noteworthy that Mr. R. Dell, Signal Engineer, London Transport Executive, receives the O.B.E. His work has been both arduous and noteworthy and well merits the special consideration which has been accorded him. Mr. W. H. Jenkins, Transport Manager of the New South Wales Government Railways, becomes an O.B.E. The Crown Agents for Oversea Governments & Administrations do very valuable work in many connections, of which railways are not the least, and Mr. I. Midderigh, Senior Engineer of the Mechanical Engineering Department, and Mr. S. F. Taylor, Higher Executive Officer, are both awarded the M.B.E.

Remuneration of Public Board Members

THE meagreness, compared with remuneration in private industry, of the increased salaries now being paid to the boards of nationalised industries, is shown in the White Paper issued shortly before Christmas. The increases date back to July 1, and represent, in the words of the Prime Minister, "the long-deferred adjustment of the salaries of the boards of nationalised industries." They are the first general rise since 1947, since when consumer prices have risen 50 per cent. The salary of the chairman of a major board as been raised from £8,500 to £10,000 a year. There are six such chairmen, including Sir Brian Robertson, of the British Transport Commission. £10,000 a year for such responsibilities would be accounted little in private industry or commerce. The discrepancy is more apparent, perhaps, with the London Transport Executive, whose Chairman, Sir John Elliot, draws £7,500 (against £7,000 before the increases). London Transport is a vast undertaking and £7,500 a year for the responsible head is very low. The Deputy Chairman of the Commission, Sir John Benstead, receives £8,000 (formerly £5,000) and the five full-time Members £7,500 (£5,000), and for the L.T.E. the corresponding rates are £5,500 (£3,500) for Mr. A. H. Grainger, Deputy Chairman, and £5,000 (£3,500) for full-time Members.

New Scales Needed for Railway Officers

THE rates for Commission and L.T.E. members are determined in relation, presumably to the "ceiling" of Sir Brian Robertson's £10,000. There is no reason why they should depress the salaries of the senior officers of British Railways and others of the Commission's undertakings, but it seems to be a fact that they have done so hitherto. As the Government has had the courage—though not very much courage—of its convictions to increase the board salaries, it is high time that a much bolder policy were pursued as to railway officers' remuneration. Our railways cannot be expected to flourish under leaders who are underpaid, especially when compared with men in other walks of life bearing comparable burdens, with many of whom railway officers are expected to associate on equal terms. There should be fresh think-

ing, and new salary scales drawn up, with an eye not on whatever the Government sees fit for public board members, but on the rates current in the competitive world of private industry and commerce.

Diesels for the Southern Region

THE order for 45 main-line Bo-Bo diesel-electric locomotives given by the British Transport Commission to the Birmingham Railway Carriage & Wagon Co. Ltd., announced earlier this week, is one of the largest to be placed for diesel locomotives for British Railways. The units are intended to operate on the Kent Coast lines of the Southern Region, which are now being electrified; they will be used mainly for hauling freight trains, and for inter-Regional passenger services which cannot be operated by electric multiple-unit trains or electric locomotives. The units will be powered by 1,550-h.p. eight-cylinder Sulzer diesel engines and incorporate Crompton-Parkinson electrical transmission equipment. Generally, it is believed, they will resemble the 38 1,160 h.p. diesel-electric locomotives at present under construction for British Railways by the same firm, which incorporate engine and transmission equipments by the same makers respectively. A feature of the design is the use of four axles for a locomotive of such power rating; with other units of similar power and transmission for British Railways, the six-axle arrangement has been more usual.

Work Study Conference

RECOGNITION of the interest taken in work study by British locomotive builders, and of the extent to which they apply it as far as the conditions of their industry allow, is shown in the chairmanship of Mr. Harold Wilmot of the conference convened next month by the British Institute of Management. No better choice could have been made. Mr. Wilmot is Chairman & Managing Director of Beyer, Peacock & Co. Ltd., one of the most efficient heavy industrial undertakings in the world, and President of the Locomotive & Allied Manufacturers' Association, besides being Chairman of the B.I.M. Council. Many industrial and other activities, including transport and building, will come under review. The gathering will take place at Caxton Hall, London, S.W.1, on February 6, and is being organised by the B.I.M. in association with seven other organisations closely concerned with improved methods and increased productivity. During the day representatives of many activities will illustrate the variety of the uses of work study. The conference will be opened by Mr. Robert Carr, M.P., Parliamentary Secretary to the Ministry of Labour. Among the speakers will be Mr. E. R. L. Fitzpayne, General Manager of Glasgow Corporation Transport, who will lead a discussion on the application of work study in his own field.

Overseas Railway Traffics

EAST African Railways & Harbours total railway revenue for the month of November, 1957, amounted to £1,575,000, compared with £1,415,000 in November, 1956, an increase of £160,000. The rise in rates and fares as from October, 1957, has again been responsible for a substantial proportion of the increase in revenue over the previous year's figures. The total revenue for the first 11 months of 1957 was £16,121,000, against £15,739,000 during the same period of 1956, an increase of £382,000. During this period receipts from passenger services rose by £107,000 over the previous year's results, whilst receipts from other coaching traffic decreased by £41,000. Receipts from freight traffic increased by over £296,000. Paraguay Central Railway receipts continue to decline in comparison to the 1956 equivalents, and at December 13, 1957, the aggregate receipts from July 1 were G43,390,431. This was G4,481,218 less than in the corresponding period of 1956. Figures received from the Midland Railway Company of Western Australia Limited, show that estimated road and railway receipts for September, 1957, were £A78,710 (against £A86,131 for September, 1956). Aggregate receipts for the three months July-September were £A220,304 (against £A255,024 in 1956).

Australian-Built Railcars for Malaya

DELIVERY is expected soon to the Malayan Railway of the six Budd-type railcars which, as recorded in our issue of February 8, 1957, are being built by the Commonwealth Engineering Co. Ltd., of Granville, New South Wales. Some details are given on another page. The intention seems to be to win back from the roads, and perhaps also to create, traffic by giving as fast a service as is practicable on the metre gauge. With a high power/weight ratio the cars should have a high performance. Two railcars and one trailer with a total gross weight of 94 tons will accelerate at the rate of 0·9 m.p.h. per sec. up to 30 m.p.h. on straight and level track; the maximum designed speed is 65 m.p.h. It is planned to operate the cars as single units only for the most intensive suburban-type service; to run three-car sets of two power cars with one trailer between for more extensive services demanding a high performance, and possibly six-car sets for longer-distance interurban services. The trailers are being constructed at the Sentul Works of the Malayan Railway.

Mechanising Traders' Accounts

BRISTOL Temple Meads, the largest freight depot, or one of the largest on British Railways, has been chosen by the Western Region for the introduction of an area accounting organisation for the mechanisation of traders' carriage accounts. Brief reference to the ceremony on December 19, when Alderman F. A. Parish, Member of the Western Area Board of the British Transport Commission, inaugurated the scheme, is given elsewhere in this issue. Those present included Mr. A. C. B. Pickford, Chief Commercial Manager of the Region, whose department is developing the plan. Briefly, the work now done at some 300 stations is to be concentrated at four main centres. Bristol is the first, and will be followed by other schemes based on Cardiff and Paddington, also on a location in the Midlands yet to be determined. The four centres together will prepare accounts involving about 1,250,000 Western Region consignment notes a month. A wide range of Hollerith type of equipment is being installed. Concentration on four centres justifies a range of equipment that would otherwise be impossible. Important features are the fact that the full collaboration of the staff involved has been maintained, and the abolition of drudgery, which will greatly increase the interest of the work in the depots concerned.

Dangers of Heat and Noise

THE impairing effects of heat and noise on the judgment and reactions of workers is suggested as a possible reason why steam locomotive crews may fail to see or react properly to railway signal indications. This is put forward by Dr. D. C. Fraser, of Queen's University, Kingston, Ontario, and formerly of the Farnborough Institute of Aviation Medicine, in the current issue of *Occupational Psychology*, the journal of the National Institute of Industrial Psychology. As a result of his observations and experiments, Dr. Fraser states that as human beings are subjected to an increase of temperature, their liability to miss a proportion of test signs, for which they are waiting, increases. The dangerous range of temperatures appears to be from 85° F. upwards. The "dramatic increase" in the number of missed observations when men are subjected to hard physical work besides temperature is also pointed out. Both these factors are present to a certain extent on the footplate; the actual degree of the heat effect on a driver or fireman, which would be considerable near the firebox backplate especially when the firedoor is open, seems difficult to determine. It must also be remembered that they spend a considerable proportion of time in the proximity of cooler air outside

the locomotive. This should not, however, prevent active investigation of the hazards to footplate staff which may be due to these, and other factors; the increasing use of diesel and electric motive power, however, will solve any problem of excessive heat in the cab.

Swedish Lightweight Train

ONE attempt to counter the competition of private motoring and bus and air travel, by means of a lightweight train is the KLL train which has recently been undergoing trials in Sweden, and is described on another page. It embodies features which result in reduced weight, low centre of gravity, and high operating speed. The concept is of a short coach riding on four wheels; each axle is built into self-contained "running gears" which include an auto-coupler and when coupled form a type of bogie or truck, roughly resembling an articulated bogie. Developments such as disc brakes and rubber suspension are also incorporated. A further feature of the KLL train, which is self-contained with a specially designed locomotive, is the attention paid to minimising air resistance, by means of small frontal area and dynamically-contoured vestibule diaphragms. Careful design has enabled commercially available components, such as diesel engines, cooling fans, and heater units, to be incorporated, so greatly reducing construction costs. It remains to be seen how far the standard of comfort achieved can attract passengers.

London Transport Standard Signal Aspects

THE introduction of the colour-light signal and later the junction indicator offered the possibility of arriving at a uniform system of signal aspects, giving the same indications at all hours, throughout the routes on which London Transport was responsible for operating all passenger trains. It eliminated the power-operated semaphores which had, be it emphasised, rendered excellent service for practically half a century, with the contemporary types of tunnel signal which had power-operated spectacle mechanisms. At the same time all coloured lights could be eliminated from shunt and subsidiary signals. This in turn simplified further the reading of the running aspects. Standardisation, which had been in progress for some time, was carried to completion not long ago. An article on page 12 explains its governing principles and illustrates the signals now used to give effect to them.

Western Australian Motive Power Shortage

GREATLY increased patronage of the Western Australian Government Railways suburban passenger service has resulted from modernised arrangements, principally railcar operation, introduced in October, 1954. An improvement of over 2,000,000 journeys over a recent period of 12 months is reported; schedules have been strengthened, and platforms are being extended to deal with the larger trains. Increased passenger accommodation in some cases is being achieved by coupling a specially rebuilt saloon coach between two diesel railcars. The number of such sets in operation, however, is still not enough, and suitable steam motive power units are not available. This has led the railways to rebuild for experimental purposes a general service 4-6-2 tender locomotive into one of 4-6-4 tank arrangmeent, as described on another page. The performance of the new class, designated "UT," is being closely watched; it is capable of good acceleration and maintenance of suburban railcar schedules, when hauling four coaches. Although the locomotive, which is fitted for oil burning, performs well for its design, on a long-term basis it is doubtful whether this can be regarded as a serious challenge to the operating economies to be gained from diesel traction. The consumption of some 4 gal. of fuel oil per mile, which is admittedly good for steam traction, compares unfavourably with a probable performance of a diesel-hauled train of equivalent weight at least half this figure.

Retardation of the Modernisation Plan

THE replies by the Minister of Transport & Civil Aviation, Mr. Harold Watkinson, to questions put before Parliament rose for the Christmas recess have thrown a little light on the effect of the restrictions on capital investment on the railway modernisation plan; but they have in no way justified the Minister's optimism as to its fulfilment to schedule which he again expressed. Mr. Watkinson pointed out that the British Transport Commission had already planned expenditures of £151 million for railway investment in 1958 and £148 million in 1959 when the restrictions were imposed and the Commission's total investment limited to £170 million for each of those years, of which £145 million was to be railway investment. The reduction in expenditure on British Railways, therefore, is £6 million for 1958 and £3 million for 1959 on planned expenditure; without limitation, however, the 1959 figure would almost certainly have been stepped up as the year approached. The cost of the programme as originally announced in 1954 as £1,200 million is now estimated to be £1,500 million because of higher prices, which is an increase of 25 per cent. As the original estimates provided for an expenditure of £135 million in 1958 and £140 million in 1959, on the revised estimates, it would be necessary for expenditure of approximately £170 million to be planned in 1958 and £175 million in 1959 to carry out the plan. The real reduction in work as a result of the cuts, therefore, is £25-£30 million.

This is serious. It is understandable that Mr. Watkinson had to admit that parts of the programme that it would not now be possible to accelerate as had been hoped, included provision of main-line diesel locomotives and some rolling stock including diesel railcars, and that the fitting of continuous brakes to freight wagons would have to be slowed down. This is bad news indeed, because it is these very aspects of the modernisation programme that were looked to to win traffic and increase gross takings and thereby help the Commission to balance its budget in 1961-62.

It is surprising that the Minister should have repeated that the programme could be completed according to schedule. Presumably his confidence was based on the possibility of the Commission accelerating its plans in subsequent years. The past history of capital investment in the railways in this country makes inevitable some scepticism as to whether enough additional capital will be forthcoming to overtake arrears. Besides this, retardation of orders has a cumulative effect. Orders placed today are fulfilled not overnight, but two or more years hence, and the beneficial effects on revenue are not reaped till then. The slowing down of the programme will have an inevitable adverse effect on the estimates in the years ahead. For these reasons it is difficult to see how the Minister and the Commission can still expect to fulfil the estimate of the White Paper that it will be in balance by 1961-62. This view was voiced in the House of Commons by Mr. Ernest Davies, Labour M.P. for Enfield East, and by other Members, and indeed is shared by a good many other people.

When Mr. Peter Thorneycroft, Chancellor of the Exchequer, announced the restrictions in October, he admitted there would be a slowing down in the programme but he said it would not materially affect the advance of British Railways towards ability to pay their way. The Minister of Transport stated the next day that the level of investment would not fall below the forecast in the Command Paper, and that there would be no delay in the fulfilment of the programme as a whole. This he repeated a couple of weeks later when he stated that the Commission had informed him that no revision of estimates was necessary, and that the date of balance was unaffected. In a recent speech, however, Sir Brian Robertson, Chairman of the British Transport Commission, admitted the restrictions would affect the programme, and the Minister has now given replies to that effect.

Retardation will have unfortunate consequences for a considerable number of manufacturers who supply the

railways. Some firms, whilst fully aware of the importance to this country of its export trade, have not sought contracts from overseas, so as to supply expeditiously the needs of British Railways; in these cases the suppliers concerned were also seized of the necessity, in the national interest, of rapid modernisation of the railways. The lack of confidence which cuts in orders of material for the home railways must engender in the industries that supply them, must have serious effects. Any manufacturer who has given priority to British Railways requirements over those of an overseas customer and now finds himself let down in the matter of orders which he had expected and planned to carry out, has the right to feel that he would probably have done better for shareholders and employees if he had taken the view that orders for British Railways—not, in the past, the most regular or influential of his customers—should take second place to those for the railways overseas which had been his principal support.

Agreement on Manning Locomotives

THE agreement on the manning of diesel and electric locomotives reached between the British Transport Commission, Associated Society of Locomotive Engineers & Firemen and the National Union of Railwaymen is the outcome of 19 months' negotiation. It is regarded by the Commission, in the words of its Chairman, Sir Brian Robertson, "as a positive contribution to the success of our modernisation plan, and to the greater productivity and ultimate solvency of the railways." On balance, we concur with this view. Agreements of this kind are bound to be compromises. In this case, the principle of reasonable working hours has been maintained; that of economy of staff observed but not, perhaps, to as great an extent as is desirable; and that of safety maintained absolutely.

Details of the agreement are given in our Staff and Labour columns on page 27. In view of the ease and safety with which fast multiple-unit electric and diesel trains with one motorman are run by British Railways during the hours of darkness—albeit for distances seldom exceeding 80 miles—one might have hoped for agreement that there should be one driver only for locomotive-hauled trains running between midnight and 6 a.m. The single manning during the night hours of the many multiple-unit passenger trains which end their journeys between midnight and 1 a.m. and start between 5 a.m. and 6 a.m., however, is specifically provided for. Comparison with practice in other countries shows that British Railways have gone further than almost any other system in the single manning of locomotives. In Britain there can now be one driver or motorman for passenger trains, including multiple-unit trains, between 6 a.m. and midnight, where the scheduled non-stop distance or non-stop running time does not exceed 100 miles or 2 hr.; this principle applies also to fully-fitted freight trains, where the non-stop distance does not exceed 75 miles. In general, one-man operation of diesel or electric locomotives is permitted on Coras Iompair Eireann—with a disclaimer by the trade unions of responsibility for any untoward consequences—and on the Berne-Loetschberg-Simplon, the Netherlands, the Norwegian State, and Swedish State Railways: this rule is variously qualified in each case. None of these systems, however, approaches British Railways in length of non-stop runs or density of traffic. Elsewhere, double manning of locomotives, except with some lighter or slower trains, appears to be the rule. Mr. W. P. Allen, Manpower Advisor to the Commission, has stated that "boredom is perhaps more dangerous than fatigue"—in relation, it seems, to the attractiveness of a driver's or motorman's work, besides the vital factor of vigilance.

With 200 electric and 200 diesel locomotives about to be placed in service annually on British Railways, the agreement is opportune. The total number of such locomotives at present in service in this country is comparatively small; so that substantial economies in wages and manpower will be reached only in the future. A notable feature is the provision for dealing with redundancy; but normal wastage will go far to minimise this.

Railways in 1858

IN the Home railway sphere of 100 years ago, the most keenly debated question was whether the new mileage then being built or promoted was justified financially. It was felt, probably with reason, that many new railways were losing money and reducing the value of the parent properties. Of branch lines, *The Times* conceded that they were no doubt very convenient to the local people, but asked the pertinent question "Will the increase of traffic cover the interest on the capital sunk and the increased working expenses?" With increased mileage, the Great Western Railway net revenue declined, and its dividend sank to 1 per cent. During the latter part of 1858 the London & North Western was being criticised week by week in the columns of the railway Press for its capital expenditure on unproductive lines, and its Northampton to Market Harborough line, which was ready for traffic at the beginning of August, but upon which a working loss was expected, was left unopened ("ready but useless," as *The Railway Times* said) until February, 1859.

Captain Galton's report to the Board of Trade said that 209 miles of new lines were opened in England & Wales, and 99 miles in Scotland, during 1858. The total mileage open in Great Britain at the end of the year was 8,354. Some of the principal openings are recorded in our Scrap Heap columns. They include the first section (Chatham to Faversham) of the East Kent Railway, which was shortly to become the London, Chatham & Dover, and for 40 years a keen competitor of the South Eastern. The first "west end" terminus in London was opened at Battersea (Pimlico) on March 29. The principal interest in the Scottish openings is that they completed rail communication to Inverness. During the year, 66 railway Acts of Parliament were passed, and included powers for 174 miles of new line in England and Wales, and 73 in Scotland. One of particular interest was that for building Victoria Station (London) and approach lines. An important acceleration in April was that of the 5 p.m. express of the London Brighton & South Coast Railway from London Bridge to Brighton, scheduled to make the non-stop run in 70 min. for the first time.

On February 1, Midland Railway trains began to run in and out of the Great Northern terminus at Kings Cross, and from August 1, through bookings with Kings Cross to and from Midland stations were brought into operation as fully as with Euston. By November the cut-throat competition between the L.N.W.R. on the one hand and the G.N.R. and Manchester, Sheffield & Lincolnshire on the other had come to an end, and in favour of the latter parties. Thus, except for the English and Scotch agreement (which continued in force for 11 years longer), nothing remained of the elaborate edifice which Captain Huish during his 12 years *régime* had raised on behalf of the vested interests of Euston Square. In the changed circumstances, the L.N.W.R. summoned a conference of railway representatives at the Euston Hotel on September 9 "to devise measures for improving the property of the shareholders, and increasing the efficiency of the railway system." Only 18 out of 256 companies attended, and even among those present there was little harmony.

The discount rate at the Bank of England, which had reached the peak figure of 10 per cent in the latter part of 1857, was 8 at the beginning of 1858, and dropped in five rapid changes to 3 per cent, at which it remained for most of the year; it even fell to 2½ in December. In that month doubts were expressed publicly as to the commercial integrity of the banking house of Overend, Gurney & Company, but the failure of that firm, resulting in commercial panic with wide repercussions on transport, did not take place until 1866. In April, 1858, income tax was reduced from 7d. to 5d. in the £. An accident which occurred on August 23 near Round Oak was described by Captain Tyler of the Board of Trade as "decidedly the worst railway accident that has ever occurred in this country." The death roll of 14 passengers, with some 50 seriously injured, was certainly the highest recorded up to

that time. The accident occurred on the Oxford, Worcester & Wolverhampton Railway to a long Wolverhampton-Worcester excursion train run at very low fares. Of 1,506 passengers, 739 were children (according to *The Times*, mainly Sunday-school children), and on the return journey in the evening it was decided to divide the train, to avoid a length of 40 vehicles. The couplings of the front portion broke, and 17 carriages ran down a 1 in 75 gradient to collide with the second portion, more than a mile away.

Abroad there were many political developments that were to have profound repercussions on the structure of railway systems. Outstanding was the transfer of governmental powers in India from the East India Company to the Crown, by Act of August 3. The company had heretofore carried on political functions without ministerial responsibility. The final suppression of the Indian Mutiny in December opened the way to a great era of railway construction. In May, Russia concluded a frontier treaty with China, and in December a commercial treaty with Great Britain. We ourselves made a peace treaty with China in June. On August 7 Ottawa (formerly Bytown) was named as the capital for the intended new Dominion of Canada. British Columbia (previously part of the Hudson Bay Territory) became a Crown Colony. Dominion status for Canada was not achieved until July 1, 1867, and the inclusion of all the present provinces was a direct consequence of the construction in the 1880s of the Canadian Pacific Railway. In August, a treaty between Great Britain and the Tycoon of Japan was signed at Jeddo (now Tokyo), and various ports were opened to British subjects, but the first railway did not come until 1872. Preliminary steps were taken for the unification of Italy, which was not achieved until 1861; thereafter, railway construction in that country proceeded apace, though beginnings had been made some years previously in the several territories subsequently unified in the Kingdom of Italy. In the U.S.A. railway construction was proceeding rapidly with the opening up of the country, and the total mileage was increased by some 2,465 to 26,968. On August 4, the harbour of Cherbourg and the railway from Caen to Cherbourg were inaugurated with great ceremony in the presence of Queen Victoria, although the railway had carried traffic from July 17.

Edward Pease of Darlington, the principal promoter of the Stockton & Darlington Railway as a horse tramroad, and then the powerful patron of George Stephenson in adopting the steam locomotive for public transport, died on July 31 in his 92nd year. Four months earlier, on March 18, Dr. Rudolf Diesel was born in Paris, of German parentage.

Western Australian Government Railways

THE comparative results of working contained in the report of the Western Australian Government Railways for the year ended June 30, 1957, indicate that while earnings reached a new high level, operating expenses rose more steeply still, and the final result after payment of depreciation and interest, was a deficit of £5,279,937, an increase of £664,093 over the deficit of the immediately preceding year. Reasons for this increase are given in the report, but it can be stated concisely that the cause of the mounting deficit is an attempt to maintain the Department at 1957 costs while still operating on 1953 charges. In other words, freight rates have not been altered since 1953, but the inflationary spiral of rising costs has continued unimpeded since that time.

Earnings totalled £14,044,111, an increase of £769,945. During the past year a high demand for wheat for export helped to lift the earnings. Operating expenses were £16,011,316, an increase of £1,018,262, which more than cancelled out the advantage of the higher earnings.

Train-miles run were 8,277,986, a reduction of 214 on the previous year. Country passenger train mileage decreased; but suburban passenger mileage and goods mileage increased; the latter was largely accounted for by the bigger wheat haulage.

Earnings per train-mile, with the preceding year in brackets, were 394·54d. (371·9d.) and operating expenses 451·42d. (421·7d.).

Passenger journeys totalled 13,576,215, an increase of 993,236. The increase was all in suburban passenger journeys; decreases were recorded in both country passenger and country road bus journeys. The increased use of private motor vehicles continues to affect country travel, while suburban patronage is influenced by the more frequent services now provided and the increasing road congestion and parking difficulties in the Perth city area. Advertising designed to induce suburban dwellers to park their vehicles at suburban stations and travel by train to the city is proving effective, and the Railways Department helps by providing free parking space at suburban stations.

Paying ton-mileage was again a record, reaching a total of 667,695,009, an increase of 59,276,804. Wheat was the principal contributor with 199,745,105 ton-miles, or 29·92 per cent of the total ton-mileage. In the previous year wheat represented only 22·05 per cent of the total.

The average haul for all traffic was 158·11 miles (160·41 miles in 1955-56), total earnings from goods traffic £11,495,292 (£10,791,184) and earnings per ton-mile 4·13d. (4·26d.). The principal traffics hauled were: Coal 11·17 per cent of total ton-mileage, timber 7·74 per cent, wheat 29·92, ores and minerals 9·49, oil in tank wagons 4·01, fertilisers 8·47, and general goods (A, B, C, first and second classes) 11·09 per cent.

The average mileage of line worked was 4,117, a reduction of two miles. Line closures during recent months will reduce this figure considerably in 1958. The average staff employed was 14,102, a reduction of 246. The mean population of the State rose to 684,000, equal to 166 per mile of railway open.

Comparative financial figures for the last two years were:—

	1955-56	1956-57
	£	£
Earnings	13,274,166	14,044,111
Operating expenses	14,993,054	16,011,316
Depreciation	1,130,709	1,257,391
Interest	1,723,314	2,055,341

The capital investment at June 30, 1957, was £45,640,066, an increase for the year of £2,377,808. Large items of capital expenditure during the year were:—

	£
Locomotives, coaches and wagons	1,386,165
Permanent way renewals and improvements	1,804,753
Mechanical and motive power workshops—machinery and improvements	110,370
Communications, interlocking, etc.	112,357
New railways, yards, and depots	143,097
Industrial requirements and amenities	97,257

The percentage of operating expenses to earnings was 114·01.

A Steep Decline in Freight Traffic

(*By a correspondent*)

IN the eleventh four-week period of each year from 1951 to 1955, British Railways originated about 23 million tons of freight train traffic. Forwardings in the same period of 1956 dropped to 22,650,000 tons and in the present year four weeks from October 7 to November 3 produced only 21,750,000 tons, a further decrease of 492,000 tons, or 2·2 per cent. Compared with their best year, 1953, the railways lost 2,041,000, or 8·5 per cent, of their freight traffic. One-fifth of the 1953 carryings of merchandise, 2·6 per cent of the mineral traffic and over a million tons, or 7 per cent, of coal and coke vanished. The London Midland, Western and Eastern Regions originated less traffic of all classes. The only highlights were that the North Eastern recorded an increase of 89,000 tons (1·8 per cent) by moving 173,000 more tons of coal and coke (4·3 per cent), while the Scottish Region carried 24,000 more tons of merchandise (5·1 per cent) and 95.000 more tons of mineral traffic, an abnormal rise of 15·7 per cent.

Unfortunately the advance statement of traffic receipts

for the next four-week period to December 1 presages a steeper decline in traffic volume. Meantime the slump, which began in September, has cancelled any advantage accruing to the railways from the oil shortage during the first 4½ months of the year. Over 44 weeks to November 3 the railways originated 231,130,000 tons of freight, 133,000 tons less than in 1956. That small decrease of 0·1 per cent is likely to grow rapidly.

Measured by net ton-miles, traffic volume is shrinking faster than tonnage. In the third quarter of the year the average length of haul for all classes of traffic was a mile shorter and evidently has not lengthened since. In four weeks to November 3 the railways worked 1,633 million ton-miles, 104 million less than in 1956, or 6 per cent. For 44 weeks to the same date 17,693 million ton-miles were recorded, a decrease of 313 million, or 1·7 per cent. The Scottish Region was the only one to add to its output of ton-miles, 14 million, or 0·8 per cent, though its coal class ton-miles were down 27·7 million, or 4 per cent. The general recession in traffic movement will make the operating statistics for 12 weeks to December 1 of particular value, when they are published in the next issue of *Transport Statistics*.

Railway Passenger Traffic

In the month of September 103,916,000 passenger journeys originated on British Railways, an increase of 7,285,000, or 7·5 per cent. The corresponding passenger takings rose from £11,403,000 to £12,012,000, or by 5·3 per cent, the average taking being 0·58d. lower. First class passengers numbered 2,125,000, an increase of 312,000, or 17·1 per cent, and takings rose by nearly 14 per cent from £1,088,000 to £1,239,000.

In nine months to September the railways carried 840,084,000 passengers, 78,192,000 more than in 1956, or 10·3 per cent. It is estimated that 29 per cent of these journeys were made by season ticket holders. First class passengers numbered 17,995,000, an increase of 2,709,000, or 17·7 per cent; they paid £1,790,000 more in fares, an increase of 18·4 per cent. The Southern Region accounted for 38 per cent of the total number of journeys and about 31 per cent of the first class bookings.

LETTERS TO THE EDITOR

(The Editor is not responsible for opinions of correspondents)

Emergency on the London Underground

December 24

Sir,—In a letter published in your issue of November 22, 1957, Mr. Ian H. Parsons put forward some suggestions which occurred to him as a result of a delay to a London Transport Circle Line train. May I make two comments on what he wrote?

Experience over many years has shown London Transport that Londoners are not prone to panic as he suggests, even when trains are held up in tunnels. Of course a long wait in tunnel is an unpleasant thing and a cause of strain; but it could only hinder the quick and efficient response of the train crew to any orders received from the railway controller if the guard were put in a position of receiving telephone calls from any passenger in any carriage. He must be in communication whenever required with the driver.

It remains true that it is a statutory requirement for all tube lines, which London Transport has also adopted as standard for new stock for surface lines, that there shall be physical means of communication throughout the whole length of every train. This enables staff or passengers to reach the front or rear of the train in case of need, and detrainment when it is necessary is carried out by this means.

Yours faithfully,

R. M. ROBBINS
Chief Public Relations Officer

London Transport Executive,
55, Broadway, S.W.1

Braking

December 9

Sir,—In view of the number of serious accidents on British Railways where one train has run into the back of another, it is strange that better braking has not been perfected. Passenger stock is designed with extra strong underframes for protection in crashes; I believe that better braking is a step in the right direction.

Vacuum brakes as used at present give a retardation of less than 2 m.p.h. per sec. Dr. F. Lanchester patented a disc brake for motor vehicles in 1902. Disc brakes are now being tried experimentally by British Railways. American Budd stainless steel railcars, with disc brakes, have been in regular use for some time, and can achieve a retardation of 3·5 m.p.h. per sec. in cases of emergency. This compares favourably with other air-operated types of brake such as those of the London Underground.

If a coefficient of adhesion of 0·25 between wheel and rail is considered, which is the figure used for steam locomotive design, a retardation of 5·4 m.p.h. per sec. theoretically should be possible. This cannot be achieved practically, as rolling stock is designed to run in either a forward or backward direction and therefore weight transference during braking cannot easily be allowed for. Higher decelerations of the order of 10 m.p.h. per sec. would be possible in emergencies, without wheelslip, if high-friction blocks, used in conjunction with normal brakes, were to bear directly on to the rails.

Yours faithfully,

T. E. SCOTT

Rutland Hall, Loughborough, Leics

Automatic Train Control

December 20

Sir,—An editorial note in your issue of December 20 refers to the B.B.C. television programme "Panorama" of December 9, in which I was questioned by Mr. Richard Dimbleby on automatic train control.

While it is true that because of the programme running late it was impossible to deal in the least adequately with so complex a matter, I must defend my contention that the Western Region system of A.T.C., notwithstanding its fine record of protection to trains, is not primarily an automatic train-stopping device. The reason, as you state, is that the brake application initiated by passing a distant signal at caution is "gradual," i.e., partial only.

This application would, of course, bring any train to a stand eventually. But what would happen to a train like the "Bristolian," running at high speed through the short block sections of the London area—(I have timed both this train and the former "Cheltenham Flyer" to continue at 75—80 m.p.h. as far as Milepost 2, within ¾-mile of Westbourne Park)—if a distant signal were passed at caution, and the driver left the A.T.C. automatically to stop his train? Does anyone seriously suggest that it would be brought to rest before colliding with a train that might be standing in the next section ahead? If not, the driver *must* act in taking over control of the brakes and making an emergency application; and the system cannot automatically guarantee safety from collision unless he does so. The mere fact that at Norton Fitzwarren in 1940, and more recently at Ludlow, the apparatus, though in perfect working order, has not prevented a collision, proves the point; and the same applies to the Milton derailment of 1955.

Only in the case of electric railways, carrying trains of

uniform weight at uniform speeds, as on the lines of London Transport, is it possible to install a form of A.T.C. that can be relied on to bring a train to a stop automatically so as to avoid a collision. On main lines carrying trains of very varied weights, speeds and braking characteristics, none of the systems adopted until now in different countries relies on A.T.C. to bring trains to a stand without the taking over of braking control by the driver. The French system has the additional precaution that the driver, by his "vigilance button," must mark the moving roll of his self-recording speed indicator, if he is approaching a signal at caution, even before the apparatus itself takes automatic action; yet even this provision has not always prevented accidents caused by failure of the human element.

Yours faithfully,

CECIL J. ALLEN

72, Rowlands Avenue, Hatch End, Middlesex

Diminishing Receipts

December 18

SIR,—Freight traffic receipts seem to continue to fall. This is not surprising so long as railways act in an uncommercial manner and so long as other nationalised industries and the Government fail to support them.

I sometimes have occasion to obtain quotations for the transport of goods by rail, but no sales talk ever seems to be given on the advantages of rail transport. If the quotation is not accepted, no enquiries seem to be made to try to find out why.

I had some connection with a Royal Ordnance Factory in the South with rail connections. At one time it even had its own passenger train for workmen; but now even the coal comes by road. Recently a large building contract was let there, and contractors were informed when tendering that although there was a rail connection, this was not to be used. I also understand a steam locomotive was transferred from Woolwich Arsenal to the Royal Ordnance Factory at Dalmuir, but it went by road! I have recently been engaged on another building site in London with a rail connection; but I have not seen it used and so far as I can trace, no agent of British Railways has visited the site or elsewhere, to try and get some business.

The sight of heavy lorries on our main roads carrying coal often to gas and electricity works with rail connections is an ever increasing and melancholy sight in many parts of the country.

Despite the encouraging results of regular interval services by diesel railcars and push-pull trains on some lines, the toll of branch lines seems to continue; one of the latest is Abergavenny to Merthyr.

Yours faithfully,

TRIASSIC

Channings, Kettlewell Hill, Woking

Staff Reductions on U.S.A. Railways

December 16

SIR,—The editorial note in your issue of December 13 mentions a drastic reduction in staff on the Pennsylvania Railroad, when traffic began to fall below the 1956 level. The company's 110th annual report explained its attitude to employees. In general, a recruit to the service stays with the railroad for the whole of his working life. Almost without exception, promotion is from within. Over half of each revenue dollar goes in wages, with the result that in lean times the financial position leaves no choice but to furlough a number of railwaymen. The P.RR. claims to pay the best wages it can without neglecting maintenance of its property or ignoring the interests of stockholders, who at best receive a meagre dividend. The welfare of its people is said to be a prime goal of the railroad, which believes that efficiency can be improved mainly by wise expenditures for utilising human effort to good advantage.

For nine months to September Pennsylvania Railroad earnings, before charges, were $12 million, or 23 per cent, below 1956. Freight revenue was up 2·7 per cent and passenger revenue 0·6 per cent, while expenses were 4·5 per cent higher.

The New York Central was in a worse case. Though expenses were slightly lower, freight revenue was down 2·5 per cent and passenger revenue 9·4 per cent, so that total earnings were 43 per cent less.

As yet there are few signs that the U.S.A. railway position is improving. For 45 weeks to November 9, wagon loadings were 1,592,000 fewer than in 1956. That decrease of 4·8 per cent was spread over all commodities except ore, the volume of Lake ore tonnage being 11 million tons larger. Coal output diminished by 5·4 million tons and filled nearly 130,000 fewer wagons. Much more serious was the loss of 1,267,600 wagon loads of general merchandise. In the first week of November the railways had an average daily surplus of 14,600 wagons, compared with a shortage of 6,000 a day in 1956. There must be some weakness in the economy of the United States when railway wagons, around which it was built, stand idle.

Yours faithfully,

R. BELL

Frognal, N.W.3

Platform Tickets

December 16

SIR,—The editorial note in your December 13 issue refers to the introduction of platform tickets at Stafford, Bangor, and Warrington in August, 1912.

I infer that the tickets at these places must have been issued at the booking office or barrier, because the London & North Western official records show that the first *machine* was installed at Wolverhampton on December 1, 1912. It cost £39 18s. and the takings for the first month were £43 7s. 8d. (10,412 tickets).

Platform tickets at Rugby Midland are still issued free at the barrier, to enable passengers to reach the booking office which is inside the station. The ticket is surrendered when booking or when leaving the station.

Yours faithfully,

C. R. CLINKER

9, Regent Place, Rugby

Passenger Coach Design

December 14

SIR,—I must partially disagree with both Mr. Maurice Jay's letter and with your editorial comments published in your December 13 issue.

Most British Railways carriages are æsthetically poor, but it is important to note that all stock now in use, including the prototypes exhibited at Battersea, were designed before the British Transport Commission Design Panel came into existence. That such stock should continue to be built is, however, deplorable, as the public naturally assumes that current production represents the best that can be done.

The diesel car seating to which Mr. Jay objects is ideal for the purpose for which it is intended, and more comfortable than that of either omnibuses with which the railcars compete, or contemporary electric suburban stock. These vehicles have proved most popular with passengers.

Given a really free hand, several British carriage builders have shown that they can produce excellent coaches, but all too often good design is inhibited by obsolete standards imposed by the purchasing railway, such as British Railways narrow hinged doors.

Good engineering and good design often go together without special effort, for both require visualisation of the coach as an entity, and not as a heterogeneous collection of components.

Yours faithfully,

JOHN RODGERS

132, Worrin Road, Shenfield, Essex

THE SCRAP HEAP

Some British Railway Centenaries of 1958

Below is a list of some British railway centenaries which occur during 1958:—

January 1, Perth to Methven opened (6 miles), Perth, Almond Valley & Methven Railway

January 5, Tredegar Junction (afterwards Pontllanfraith) to Quakers Yard opened (7 miles), Newport, Abergavenny & Hereford Railway. (Some mineral traffic over 2 miles from December 28, 1857)

January 25, Chatham to Faversham opened (17¾ miles), East Kent Railway

February 1, Stokesley to Ingleby opened (3½ miles), North Yorkshire & Cleveland Railway

February 1, Cannock and Norton branches opened (10½ miles), South Staffordshire Railway

February 1, St. Helens to Rainford opened (5 miles), St. Helens Railway

February 25, Rhymney to Walnut Tree Junction, Taffs Well (18 miles) opened for goods; passengers March 31, Rhymney Railway. (Part opened for minerals on December 28, 1857)

March 1, Ormskirk to Rainford opened (6 miles), East Lancashire Railway

March 1, Hyde Junction to Hyde opened (1 mile), Manchester, Sheffield & Lincolnshire Railway

March 1, Hertford to Welwyn Junction opened (7 miles), Hertford, Luton & Dunstable Railway

March 15, Strathmiglo to Milnathort opened (7 miles), Fife & Kinross Railway

March 25, Dalvey to Elgin opened (14 miles), Inverness & Aberdeen Junction Railway

March 29, Wandsworth to Battersea (Pimlico) opened (3¼ miles), West End of London & Crystal Palace Railway

March 29, Strood to Chatham opened (1½ miles), East Kent Railway

March 31, Gas Factory Junction, Bow, to Barking opened (4½ miles), London, Tilbury & Southend Railway

April 1, Llandilo to Llandovery opened (11 miles), Llanelly Railway (Vale of Towy line)

April 1, Denny branch opened (3 miles), Scottish Central Railway

April 1, Bedlington to Morpeth (5 miles) opened for passengers; goods October 1, 1857, Blyth & Tyne Railway

April 5, Hexham to Chollerford opened (4 miles), Border Counties Railway

April 5, Dunstable to Luton (5½ miles) opened for goods; passengers May 3, Hertford, Luton & Dunstable Railway

April 8, Hammersmith branch (1¼ miles) opened for passengers; minerals May 1, 1857, North & South Western Junction Railway

May 3, Crystal Palace Line Junction to Shortlands (then called Bromley) opened (3½ miles), West End of London & Crystal Palace Railway

May 3, Highbridge to Burnham opened (1½ miles), Somerset Central Railway

May 5, Watford to St. Albans opened (6½ miles), L.N.W.R.

May 31, Cowlairs to Bowling (11 miles) and Dalreoch to Helensburgh (7¾ miles) opened, Glasgow, Dumbarton & Helensburgh Railway

July 5, Shortlands to Bickley (then called Southborough Road) opened (2½ miles), Mid-Kent (Bromley to St. Mary Cray) Railway

July 12, Brockenhurst to Lymington opened (4½ miles), Lymington Railway (L.S.W.R.)

August 18, Elgin to Keith opened (18 miles), Inverness & Aberdeen Junction Railway

August 20, Milnathort to Kinross opened (3 miles), Fife & Kinross Railway

August 23, Orton to Rothes opened (3 miles), Morayshire Railway

September 2, Shrewsbury to Crewe opened (33 miles), L.N.W.R.

October 1, Llandudno Junction to Llandudno opened (3 miles), St. Georges Harbour Company

October 5, Rhyl to Denbigh opened (10¼ miles), Vale of Clwyd Railway

October 18, Lewes to Uckfield opened (7¼ miles), London, Brighton & South Coast Railway. (Formal opening October 11)

October 19, Shildon Tunnel to St. Helens Auckland opened for passengers (3 miles), Stockton & Darlington Railway

November 9, Witham to Shepton Mallet opened (9 miles), East Somerset Railway

November 15, Spalding to Holbeach opened for passengers (10 miles), goods earlier, Norwich & Spalding Railway

December 23, Rothes to Dandaleith (then called Craigellachie) opened (2¼ miles), Morayshire Railway.

Change of Christmas Card

Five thousand Christmas cards, printed for the Southern Region of British Railways, did not go out. They were withdrawn on the orders of Mr. Charles P. Hopkins, the Region's General Manager. The reason: they showed a four-aspect rail signal similar to Signal L18, near St. Johns Station, Lewisham, where 89 people died and 200 were injured in the disaster of December 4.

Instead, the Southern Region sent out 5,000 cards bearing no picture—just the inscription: "With every good wish for your happiness at Christmas and in the New Year. From British Railways, Southern Region."

. . . a Southern Region spokesman said the original cards—designed and ordered long before the crash—were being retained for use "on a happier occasion." The decision to withdraw the cards, which treated the picture of the four-aspect colour light signal "in a humorous way," was made solely by Mr. Hopkins.—*From the "Sunday Express."*

Racehorse Winnings to Build Railway

John Plummer Esq., of New Parks, the owner of Alice Hawthorn, has generously proposed to give the whole of the money which this celebrated mare may realise in 1845, to the inhabitants of Easingwold, provided they will construct a branch railway from that town to the Great North of England Railway.—*From "The Illustrated London News" of January* 4, 1845.

[This modest 2½-mile branch envisaged was not built until 1891 and has just been closed.—ED., *R.G.*]

Puzzle for Historians

When did the railways first introduce the idea of platform tickets? Were they always a penny? And what was the guiding principle that inspired the railway pioneers when they introduced them? . . . Knowing that there would be an inevitable shoal of inquiries, especially from railway enthusiasts, the archivists of the Commission . . . searched through every sort of document from old timetables to antique numbers of railway magazines. But this appears to be one subject that the historians have ignored.—*From "The Manchester Guardian."*

Twopence Coloured

(*Platform tickets now cost 2d.*)

No longer does one copper coin suffice;
You have to go through all the motions twice
Ere you can hope to speed the parting train
And find yourself entitled to regain
Terra cognita, where, with fellow-men,
One circulates *ad lib.,* just now and then.

This increased charge for what costs next to nowt
Must make the careful soul regard with doubt
Those latticed portals leading to the trains,
At which this double-entry lark obtains.
It may be that no price is hard to pay
To set the tiresome guest upon his way,
Or have a share in the time-honoured rite
Of fond farewells and shouts of "Mind you write!"
Hospitable unto the bitter end,
When taillight, train and guest go round the bend.

One apprehensive thought besets my brain:
If platform tickets in the past were plain,
I hope it's obvious to the merest dullard
That penny plain should be twopence coloured.

A. B.

OVERSEAS RAILWAY AFFAIRS

(From our correspondents)

SOUTH AFRICA

Interurban Railcar Services

The General Manager of South African Railways, Mr. D. H. C. du Plessis, with Mr. B. J. Schoeman, Minister of Transport, has recently visited Australia and inspected railcars on the Western Australian Government Railways. He states that South African Railways intend to introduce fast interurban passenger services using diesel-electric railcars.

New Headquarters in Bloemfontein

The Minister of Transport announced recently that an administrative block for the Orange Free State System, to replace the existing railway headquarters in Bloemfontein, will be completed by 1960 at a cost of £750,000. The Minister also disclosed that 300 new houses for railway employees were to be provided in Bloemfontein.

NEW ZEALAND

Diesel Motive Power Conference

A conference was held recently between railway commissioners of Australian States and New Zealand on the introduction of diesel motive power. After the conference, Mr. A. T. Gandell, General Manager, New Zealand Railways, stated that the use of specialised plant and equipment, and the mechanical handling of goods was also considered. Some time was spent discussing ways and means of co-ordinating the research activities of the several systems to avoid overlapping and ensure each system was fully informed on progress. The New Zealand Railways civil engineering branch had been doing research into the stresses placed on rails by different types of rolling stock. This information would be circulated throughout New Zealand and Australia.

PAKISTAN

Survey for E.B.R. Line

A survey is to be made for a metre-gauge line of the Eastern Bengal Railway from Narsingdi (Jinardi) to Narayanganj (Sonakund), about 28 miles, in East Pakistan.

INDIA

Mokameh Ganges Bridge

The main spans of the bridge being built at Mokameh are to be erected by the cantilever method except No. 1, of which half will be erected on falsework. Apart from the road cross-girders and stringers the spans will be cantilevered out from adjacent spans complete in all respects. Suitable temporary additional members and strengthening of certain others will be provided to make this possible. Scotch derricks and a special erection crane will be used on Span No. 1. The total girder steelwork required is over 13,000 tons of which nearly 7,000 are high-tensile steel, but because of late delivery, erection is being delayed.

200th Coach from Perambur

In the presence of the Acting Governor of Madras, the Minister of Railways, Mr. Jagjivan Ram, by pressing a switch, recently "launched" the 200th coach built at the Integral Coach Factory at Perambur, Madras, two months ahead of schedule. The inauguration of production at these works was in October, 1955, but it is hoped that with the introduction of a second shift and the training of more technical staff at least 600 coaches will be turned out annually in the future.

ARGENTINA

Buenos Aires Underground Railways

Within two years it is hoped to produce locally 100 underground railway cars each year for the city of Buenos Aires and to begin the construction of more than 62 miles of new branch lines.

Attacks on Railway Property

The unstable political situation in Argentina found expression recently in attacks by terrorists on railways, stations, and trains. An electric train of the Mitre Railway was almost completely destroyed in San Isidro Station on the Mitre Railway on November 4, when two Molotov cocktails exploded in coaches at each end of the train which was waiting to return to Buenos Aires. At that time also two armed men got away with 87,000 pesos from Ramos Mejía Station on the Sarmiento Railway.

UNITED STATES

Meals Included in Train Fare

The unique experiment inaugurated by the Union Pacific Railroad some months ago, of running a daily streamline train by which the fare includes unlimited buffet meal and refreshment service, is evidently successful, as the train, the "City of Las Vegas," is being continued. It runs in the morning over the 335 miles from Los Angeles to Las Vegas, and returns in the afternoon and evening. Until recently the service was worked by the lightweight General Motors "Aerotrain," but this has now been returned to the makers and replaced by a train of standard equipment, including a full-length lounge.

Consolidating Duplicate Trains

The Atchison, Topeka & Santa Fe Railroad is seeking authority to merge the all-Pullman "Super-Chief" with the all-coach "El Capitan" during the

Canadian Pacific "Piggy-Back" Service

Diesel-hauled Canadian Pacific Railway train at Christie Lake, Ontario, consisting of specially designed roller bearing flat wagons carrying the trailers

five months of the year when passenger traffic is at its minimum. These are the two fastest streamline trains on the service between Chicago, Kansas City and Los Angeles, allowed only 39¼ hr. for the 2,224 miles. The "El Capitan" for some months past has been made up entirely with double-deck "Hi-Level" coaches, in which all the passenger accommodation is on the upper deck.

The Southern Pacific Railroad similarly is seeking to consolidate the joint Rock Island-Southern Pacific "Imperial," Chicago-Los Angeles, with its own New Orleans-Los Angeles "Argonaut" over the 1,996-mile route between El Paso, Texas, and Los Angeles, which is followed by both trains. Considerable alteration will be required in the schedule of one or both trains, as hitherto they have run at widely separated times.

The summer fusion by the New York Central System of the "Commodore Vanderbilt" with the "Twentieth Century Limited," which for the first time caused "coach" or second class accommodation to be included in the latter train, has now ceased, and separate working has been resumed for the winter, with the restoration of the full service charge for passengers by the "Century."

TURKEY

New Bosphorus Wagon Ferry

The wagon ferry *Demiryolu* was launched recently at the Golden Horn Shipyard, Istanbul. The ship was ordered by the Turkish State Railways Administration for service between Sirkeci, on the European, and Haydarpasa, on the Asian shore of the Bosphorus.

Length overall is 240 ft., gross tonnage 1,316, and speed 11 knots.

The ship is of the single deck type with three lines of track welded on. The propelling machinery consists of two triple-expansion steam engines, each of 640 i.h.p. at 140 r.p.m.

SWITZERLAND

Brighter Colours for Rolling Stock

The Federal Railways are brightening up their passenger stock. Some restaurant cars are now painted in a red livery, which distinguishes them from the prevailing green or grey colour of the rest of the vehicles in a train and so helps to indicate their position. A trial is being made in painting a lightweight train electric locomotive blue. The effect is satisfactory, but before making a definite decision as to the other motive power units, a study is to be made whether it is worth while doing it on a large scale. It is feared that with colours other than green, which are liable to become dirty very quickly, maintenance will be more expensive.

FRANCE

Northern Region Electrification

There has been some slowing down of activity in electrification of the Northern Region main line from Paris to Lille. Some overhead structures have been erected between Paris and Amiens. Catenaries are reported to be more or less complete on the Amiens-Lille section. Electrification is stated to be abandoned temporarily of the Amiens to Paris freight line via Montdidier and on the Paris suburban lines.

It is now hoped to start electric operation of freight trains from Lille to Amiens next March and Amiens to Paris in about 12 months. The date for commencement of passenger operation is uncertain.

This slowing down of electrification is on financial grounds. It has caused some shortages of motive power and some steam locomotives which had been put aside as not worth repairing have been rushed through shops.

As a result of engineering works occasioned by electrification near the Gare du Nord, Paris, certain Le Tréport and Beauvais trains are running into the Gare St. Lazare.

BELGIUM

Brussels Junction Line

The recent laying of the last three tracks at the Gare du Midi, Brussels, virtually completed work on the Junction Line linking the reconstructed Gare du Nord, the new Halte Centrale, and the reconstructed Gare du Midi. The introduction of "Trans Europe Expresses" last year necessitated building a special annexe to the booking office at the Gare du Midi for the teleprinter service for seat reservations.

Publications Received

Steam Locomotive Design, Part 1. By R. H. Mann. Richmond, Surrey: The Association of Engineering & Shipbuilding Draughtsmen, Onslow Hall, Little Green. 8¼ in. × 5¼ in. 114 pp. Illustrated. Paper covers. Price 6s.—This pocket-size publication is intended primarily for young draughtsmen and trainees in the locomotive and railway industries. The author assumes a fair general engineering background and knowledge; this is necessary because of space limitations. After a discussion of general considerations, sections are devoted to modern practice, as far as this country is concerned, as to frames, axleboxes, and spring gear; and the various features of the boiler. These are described in many cases by text and diagram. Useful empirical formulæ also are published. Although not as detailed as some treatises on the subject, the booklet has the advantage of dealing with some recent innovations, such as the Crosti boiler fitted to some British Railways "9F" class freight locomotives.

ABC: British Railways Diesels.—Hampton Court, Surrey: Ian Allan Limited, Craven House. 6 in. × 4 in. 64 pp. Illustrated. Price 2s. 6d.—This is a new edition in the publishers' well-known ABC series of booklets for railway enthusiasts. While the booklet follows the usual layout for the series, an innovation is the number of pages devoted to explaining the advantages of diesel traction, the basic principles of diesel engines, and transmission systems found on British Railways units. A short section is also devoted to the method of designating diesel locomotive wheel arrangements.

Canada—Industrial Opportunity.—This booklet, published by the Department of Industrial Development, Canadian Pacific Railway, has been prepared for British and European enterprises wishing to investigate or develop the natural resources of Canada. It describes the functions of the Department and explains how it can be of service in establishing main or branch factories, warehouses or sales distribution offices, or in securing introductions to reliable Canadian agents. Copies are available free from Canadian Pacific Railway, 62, Trafalgar Square, London, W.C.2.

Cruising on the Trent Waterway.—This is the second of a series of booklets being issued by British Transport Waterways on cruising on the nationalised canals and inland waterways. It is fully illustrated by photographs and diagrammatic maps and contains a folding map of the principal waterways. There are descriptions of places of interest along the canal, hints on navigation at points where the amateur may meet difficulties, and instructions for pleasure craft users. At the end of the 40-page booklet are scales of charges and a list of hirers and operators of pleasure craft. Copies of the booklet may be obtained from the British Transport Commission, 222, Marylebone Road, London, N.W.1. Price 2s.

Calendars for 1958.—We have received calendars for 1958 from Hunslet Engine Co. Ltd.; Brown Boveri & Co. Ltd., D. P. Battery Co. Ltd.; Westinghouse Brake & Signal Co. Ltd.; Le Tourneau-Westinghouse Company; the Railway Convalescent Homes; Talyllyn Railway Company; Stewarts and Lloyds Limited; the South African Railways; East African Railways & Harbours; Canadian Pacific Railway; Pennsylvania Railroad; Department of Railways, New South Wales; Netherlands Railways; and Spoorweg Sein Industrie N.V.-Utrecht.

Special-Duty Wagons for Kariba Dam Project

Two 102-ton, 20-wheel vehicles for handling transformers and other loads

TWO special-duty 20-wheel, 3-ft. 6-in. gauge wagons are being built in connection with the moving of transformers and other heavy equipment for the Kariba Hydro-electric scheme in Rhodesia; this project provides for the harnessing of the waters of the Zambesi to meet increasing power demands of the Federation of Rhodesia & Nyasaland. The contract was awarded by the Federal Power Board for the supply of two 102-ton transformer wagons to Head Wrightson Teesdale Limited, a subsidiary of Head, Wrightson & Co. Ltd.

These vehicles will be used for transporting transformers constructed by Ferranti Limited and English Electric Co. Ltd. and other special loads, over some 1,000 miles of difficult country from the port of Beira over the Beira Railway to the Rhodesian frontier and thence over the Rhodesia Railways to railhead at Lions Den.

The latter station is on the Sinoia branch, which is 140 miles by road from Kariba.

Underframe

The well-type beams on these wagons are removable and can be replaced by straight high-side beams when special loads are to be carried. The underframe consists of two main side beams, each of which is built up by welding two mild steel flange plates to a mild steel web plate. The side beams at the centre are 35 in. deep; they consist of 12-in. × 2½-in. flanges and 1¼-in. thick web plates. The depth of the side beams beyond the well end above the bogies will be reduced together with the flange thicknesses.

The pay-load of up to 102 tons is equally transmitted through these side beams to end bolsters and so to the bogies. The side beams are held together by tubular crossbars, the end-plates of which will be bolted to the side frames.

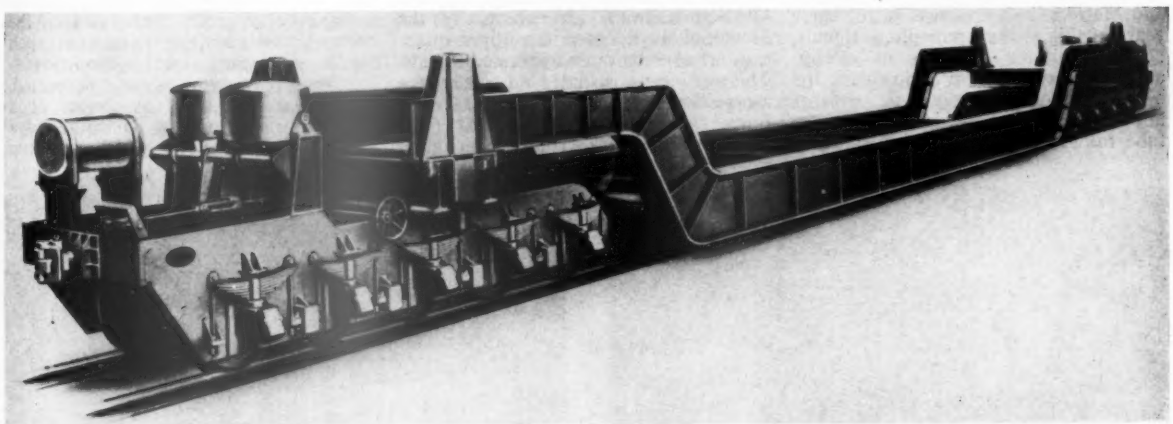
Hydraulic jacks are provided in the bolsters, capable of raising the beams loaded by 1 ft., and removable joist crossbars are supplied between the well beams thereby giving support and to act as a floor in the well of the wagon when it is used for normal traffic.

Bogies

The course of the railway from Beira, where equipment for this project will be landed, crosses very difficult country, and for this reason, it is stated, the bogies on the wagons are of a special design. Two 10-wheel bogies will be provided with wheels at 3-ft. 7-in. centres, resulting in a fixed wheelbase of 14 ft. 4 in.

The bogies are of welded construction built up of mild steel plates and rolled steel sections, and provided with

(*Continued on page* 15)



General view of heavy-duty well-wagon under construction by Head Wrightson Teesdale Limited

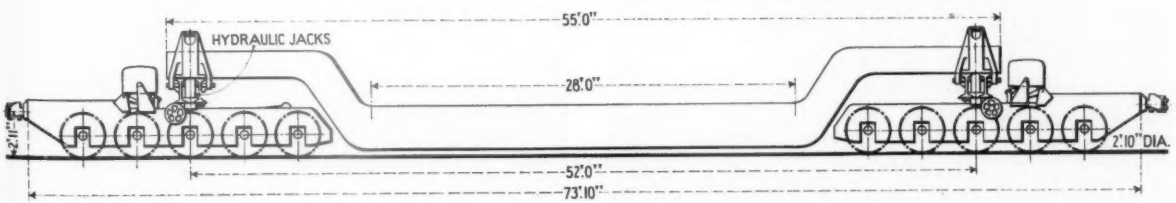
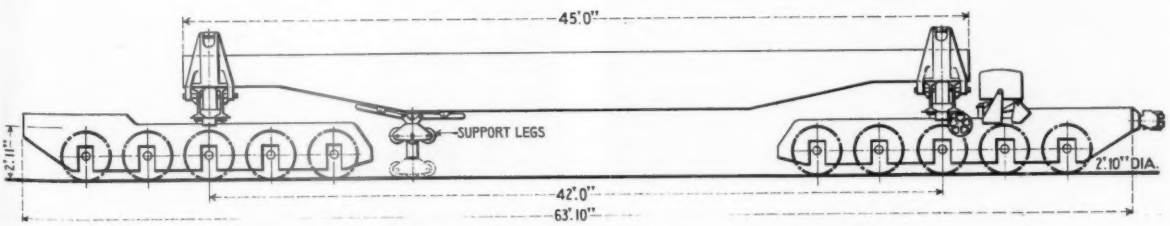


Diagram of well-type version of 102-ton wagon for handling transformers



20-wheel vehicle fitted with straight high-side beams for special loads

Standardisation of Signal Aspects on London Transport

Standard system of signal aspects now completed, using for running movements colour-light signals exclusively, in conjunction with automatic train stops

FOR some time past London Transport has been carrying out a programme of standardisation of signal aspects in order to eliminate certain variations which originated in the days of the separate ownership and management of the routes constituting its present system. This has now been completed on all those which formed part of the old District and Metropolitan Companies' lines and the tube railways associated therewith, as well as to some extent outside that area, as for example on the jointly owned East London Railway. (On the lines north of Harrow to Chalfont and Watford, over which fast steam services are operated by British Railways, the signal aspects are arranged to meet the special requirements thus created and include three-aspect running colour-light signals and other features not covered by this article.)

On the adoption of power signalling for the electrification of the District and Metropolitan Railways in the early years of this century semaphore signals, operated by air cylinders or electric motors, were of course adopted for the open sections and often at the ends of underground station platforms, the tube railways—where they emerged to the surface as at Golders Green and Hammersmith — being similarly equipped.

In the tunnels, however, lights alone had to suffice and on the District and tube lines spectacle glasses were moved in front of lamps by air cylinders, but on the Metropolitan simple light signals containing electric lamps, switched on and off behind coloured lenses were used, forming a much improved version of those already in service on the Great Northern & City Railway, then an independent undertaking. The two-aspect system of indications was adopted and has been adhered to ever since, as best meeting the special conditions applying to the London Underground.

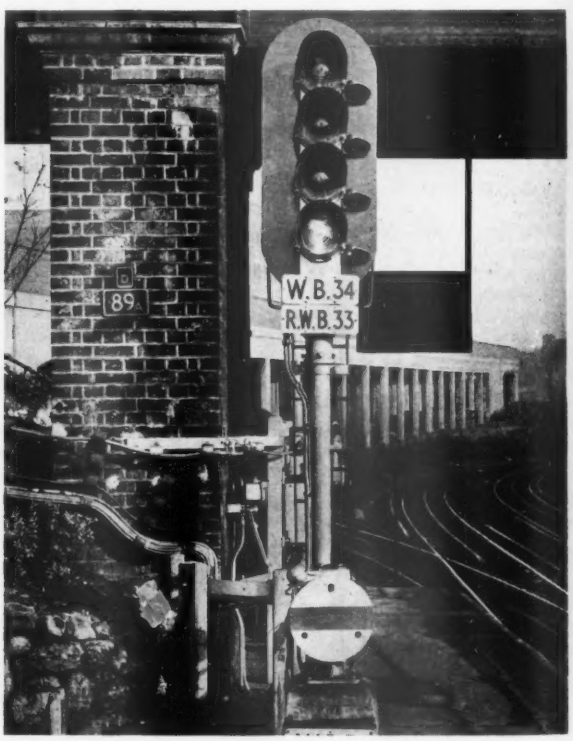
" Stop " and " clear " indications were given by the horizontal and inclined positions respectively of the semaphore arm, with red and green lights to correspond. The lower quadrant movement was used invariably by the District Railway, but eventually the Metropolitan adopted the upper quadrant arm for its power-operated signals. This was seen also later on some open air sections of the tubes, as at Wood Lane, Central London line. (The extension of this route to Ealing Broadway over G.W.R. property was signalled by the latter company with three-aspect upper quadrant signals, one of the very few examples of such working in the United Kingdom, now abandoned.)

At junctions the geographical system of bracketed semaphores was followed, as in main line practice, but in tunnels routes had to be indicated by mounting signals one above the other, or one on each side of the track, or side by side between tracks, according to the clearance available and other local conditions. At certain locations an illuminated route indicator was used, and this became increasingly common until the introduction of the position-light junction indicator, first seen in its now well-known form on London Transport lines in 1938.

General Principles

The principle governing this two-aspect signal system was that if a clear semaphore or green light was seen the driver could continue to run at such speed as the local conditions—gradients, curves, etc.—permitted, while if a semaphore at danger or a red light came in view he would have sufficient distance in which to stop

Platform starting signal with "A" sign. (Disc with black fishtail is not part of the L.T.E. system of aspects)



Platform starting signal with repeater below referring to next signal in advance and shunt signal, showing side lights

thereat, under normal weather conditions. (The question of fog is dealt with hereafter.)

As, however, it was not possible always to give a sufficiently long approach view of a signal so-called "repeater" signals were adopted. These were introduced on the District line in 1906 in the Hammersmith area to assist drivers of Midland coal trains travelling to depots in Kensington and resembled the distant signals used on the then remaining mechanically signalled sections of the railway and the main lines. The fishtailed arms were red and exhibited red and green lights, being mounted under the ordinary stop type automatic or controlled signals and repeating the indications of the next in advance. As it had been decided to use yellow arms and lights for such signals on the tube lines the District adopted them from March 17, 1907. At first, repeater signals were very sparingly provided. They could, of course, stand alone at a suitable distance in rear of the signal they repeated, if circumstances required, and sometimes were made applicable to more than one stop signal, where these were closely spaced, as at the approach to stations. All signals carried a number plate indicating whether they were automatic or controlled and, in the latter case, from which signalbox. The stop signal arms also were painted distinctively, to denote these two operating conditions. All stop signals, of whatever class, were fitted with automatic train stops producing a full brake application should a danger indication be overrun.

For shunting and subsidiary signals small semaphore arms were used with coloured lights by night, but the application of the latter differed a little as between the District and Metropolitan routes. It is, of course, impossible to give to the signalling colours yellow and green the same meanings in shunt signals that they bear when shown in running signals and the wish to avoid this difficulty and find something entirely distinctive led to the adoption of the floodlit disc type of signal, in which a coloured bar on a white background gives, according to its position, a uniform system of aspects throughout the 24 hr. (This signal also came into use on some main lines.)

Introduction of Day Colour-Light Signals

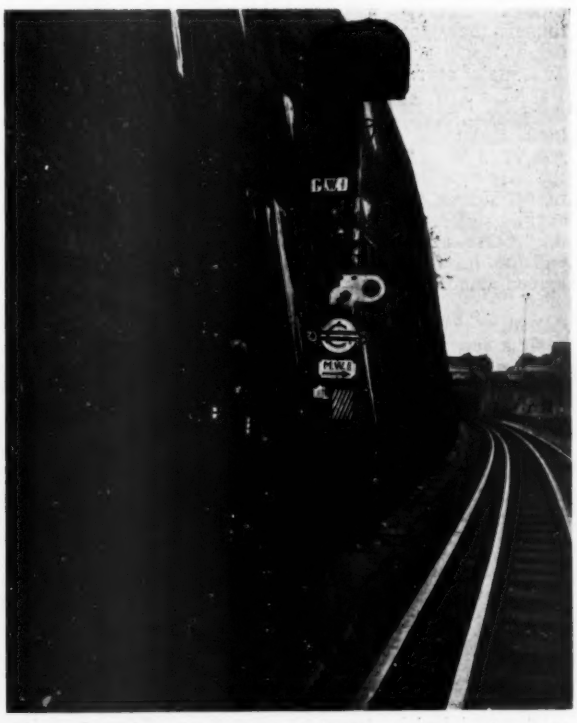
This type of signalling gave excellent results and continued in operation for many years, but with the coming of the long-range day colour-light signal, first used for the opening of the extension of the Northern line beyond Golders Green in 1923, the opportunity presented itself of establishing a complete uniform system of aspects and in due course this was accomplished. The use of the colour-light signal for running movements, combined where required with a junction indicator, and floodlit shunt and subsidiary signals, gave a simple code of indications answering to every traffic requirement which was the same at all hours. The accompanying illustrations show the various classes of signal used with it.

Running Aspects

An ordinary stop signal shows a red light for "stop" and a green one for "proceed," the corresponding aspects for the repeater signal, where provided, being yellow and green. If the latter stands alone it is continuously lighted but if carried under another stop signal it remains dark while the red light above is showing. When the control for the green light in a stop signal becomes established the red light remains illuminated from an additional circuit until the train stop has operated correctly. Originally this was not the case but occasionally a train stop would fail to come to the clear position with the result that a motorman travelling at speed on the assurance of a green indication would receive an unexpected emergency brake application, disconcerting for himself and unpleasant for the passengers. With the present standard circuits should the train stop remain irregularly in the operative position both lights will be seen showing together, which is a danger indication, and the motorman will be able to take appropriate action.

The standard signal for open sections has 8-in. lenses, behind each of which is a three-pin 11-V. (12-V. nominal) 33-W. double filament lamp, the second filament being appreciably underrun.

Home signal, junction indicator, and warning signal. Above the latter miniature junction indicator. Below is a shunt signal with route indicator



Home signal with junction indicator for two diverging routes and calling on signal. Above the latter is a miniature junction indicator

Fog repeater signal at approach to an ordinary signal; this is switched on during periods of poor visibility

"Permissive" three-aspect signal governing approach to a signal protecting a movement a short distance ahead

Each indication—except in individually mounted repeater signals—has a side light, with 9-W. lamp. Where, however, a shorter range indication will meet requirements a signal with 6-in. lenses is used; the lamps are then 100 V., 35 W., with grid filament. This is seen at times in underground stations where surrounding lighting and other conditions render it advisable. In the tunnels the signals have 4½-in. lenses, behind each of which are two lamps. The main one, at the focal point, is 100 V., 6·5 W. and has a frosted bulb; the second, placed in front of the main bulb, and fitted with a clear bulb, is 100 V., 5 W. There are, however, on the Metropolitan line a number of tunnel signals of an earlier design and slightly different characteristics, but in due course, all lamp ratings and so on, will be in accordance with the now agreed standards.

"Permissive" Signals

At a few selected locations so-called "permissive" signals are provided at a short distance in rear of an ordinary stop signal, to regulate approach to the latter when it is protecting a fouling movement taking place a short way ahead. These are three-aspect signals and remain at red while the signal in advance is at danger until a train approaches very close to them, when they change to yellow to allow it to draw forward in safety to the ordinary signal. When the latter changes to green the permissive signal does the same, whether then showing yellow or red. Train stops are, of course, fitted at these signals, which bear the same number as the signal with which they work multiplied by ten.

It is found advantageous to have certain automatic signals at the approach to a signalbox area treated as controlled signals by any motorman who may be stopped thereat and not allow him to pass them under the "stop and proceed" rule. The number plates on such signals therefore bear the designation letters of the signalbox ahead, with the addition of "X," and a motorman is required to obtain telephonic permission from there before passing a stop indication.

Controlled Signals Working Automatically

Whenever a signalbox is closed and the signals normally controlled from it are working entirely automatically, an illuminated letter "A" is exhibited on the signals concerned, which enables a motorman to act correctly if stopped at one of them.

Fog Working

When power and automatic signals were introduced, those on the District line in the open were equipped with air-operated Clayton type fog signal placers, maintaining a detonator on the rail a short distance in rear of any signal at danger, while the Metropolitan line employed fog signalmen, as with its other signals. The difficulty of manning the fog posts in the 1914 war led to the development of the "fog repeater," a repeating light signal located in rear of the stop signal and switched on during fog, or other conditions of poor visibility. The results were so good that such signals became generalised throughout the Underground system. The 6-in. lens signal mentioned above is now used for this purpose with yellow and green lenses, the former being marked with a black "F" as an additional distinction, with suitable marking on the front plate, as seen in one of our illustrations. The fog repeaters are switched on and off from signalboxes or stations, as circumstances require, and usually are located about 400 ft. in rear of the signal to which they refer.

Junction Signalling

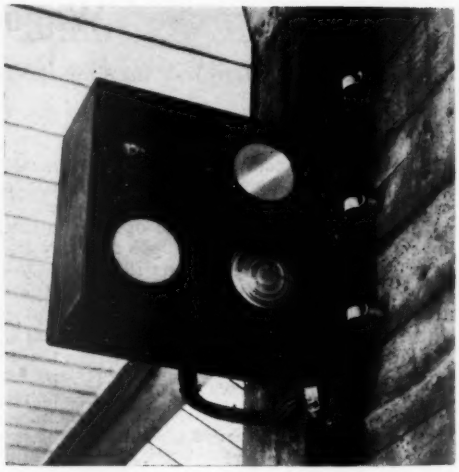
The bracket type of signal, used with semaphores and some light signals later, has disappeared and all junction movements are signalled by three-light type indicators, as seen also in main line work and functioning on like principles, with the usual proving circuits to ensure that no direct route clear signal can be given irregularly, following a failure of an indicator. A smaller design has necessarily to be used in tunnels or other locations of limited clearance. Up to three indications on each side of the direct route can, of course, be given but more than two diverging routes in all seldom require to be signalled. Where a junction home signal is preceded by a repeater the latter carries a miniature indicator, duplicating the aspects of the main one at the junction itself. A fog repeater relating to a junction signal is similarly equipped.

Subsidiary Signals

London Transport uses two classes of subsidiary signal, as distinct from ordinary shunt signals, namely the "calling on" and the "warning," each consisting of a floodlit white disc bearing a horizontal red bar with white central stripe and the letter "C" or "W" in red, superimposed. The disc is moved so as to bring the bar to the 45 deg. position when the signal is cleared.

The "calling on" signal is used only to admit a train to a platform occupied at the farther end and cannot be cleared until the train has been stopped at it. In these circumstances and

Standard tunnel type signal carried on tube segments, showing also electro-pneumatic valve controlling the associated automatic train stop and automatic signal designation plate



Platform signal for guidance of trainmen and station staff, repeating starting signal, junction indicator, and shunt signal at the same location

where there is a group of home signals a train is brought up to the stop indication from the signal in rear, not by a running indication but under a "warning" signal, which indicates therefore that the line is occupied a short distance ahead of the signal in advance. The controls which determine that the "calling on" signal must be given secure also the correct use of the "warning" aspect at the approach thereto. If the stop signal below which a "calling on" or "warning" signal is mounted has a junction indicator working with it a miniature one also is fitted over the subsidiary signal itself and used when that is operated, if the route ahead requires it.

Shunt Signals

Shunt signals are of the same construction as calling on and warning signals, but the coloured bar is plain red and has no letter superimposed. Where circumstances require, an illuminated "theatre"-type route indicator is fixed over a shunt signal and displays a number when the latter is "off." At a few locations, however, a simple illuminated stencil box indicator is used instead of the larger theatre type.

On London Transport lines a guard must not give the signal to start to the motorman unless the fixed signal controlling such movement is clear. Where he cannot see it, or fog may prevent him from doing so, platform repeaters are provided. These have yellow and green lenses and in tube stations are sometimes combined with other apparatus in a case on the tunnel head wall. Where the starting signal has a junction indicator or a shunt signal, or both, mounted with it, normally dark illuminated indicators in the platform repeater case duplicate their aspects for the information of the guard, except, of course, the "on" indication of the shunt signal, considered unnecessary.

This system of aspects has been found to meet the conditions obtaining on London Transport lines quite satisfactorily and to give excellent results in everyday working. The indications are few in number and easy to understand. Under no circumstances is a motorman required to pass a red light in normal working, while very strict rules govern the passing of one in case of unavoidable necessity, when, of course, the train stop somes into operation and the train mechanism has to be reset. Careful study is made of all the factors involved when deciding the location for a signal, selected always to give maximum freedom of traffic operation, with the assurance that the train stop will afford the desired security should exceptionally a stop indication be overrun.

We are indebted to Mr. R. Dell, Signal Engineer, London Transport Executive, for the photographs and information contained in this article.

Special-Duty Wagons for Kariba Dam Project

(*Concluded from page* 11)

a compensating springing system. The maximum permissible axle load is 15 tons, and for this reason, together with the loading gauge restrictions, the bogies are of a special design.

The inner axleboxes are supplied with sliding tops to allow for the transverse movement of the inner axles when the wagon is negotiating a curve. Axleboxes with plain bearings for 10-in. × 5½-in. dia. journals are located between horn guides attached to the bogie soleplates. The wheels are of the solid rolled steel type of 2-ft. 10-in. dia. on tread.

The wagons are fitted with automatic couplers and draft gear arranged at a height of 2 ft. 11 in. from rail level to the centre line of coupler. The vehicles are equipped with automatic vacuum brakes, two cylinders for which are mounted on each bogie. They are arranged with a change-over mechanism, so that two 15-in. dia. cylinders may be used when the vehicle is light, and all four cylinders used when it is loaded.

DEMONSTRATION OF STAFFA CRANES.—The Staffa 3, 2 to 3-ton capacity semi-slewing mobile crane was demonstrated recently to representatives of British Railways at the Hoe Street Goods Yard, Eastern Region, Operations included the lifting and slewing of an empty A-type container, a metal casting weighing some 21 cwt. between various railway road and rail vehicles. The semi-slewing version is basically the same as the standard Staffa 3 crane, but has been partially reconstructed to enable the jib to slew through an arc of 100 deg. The use of a standard Staffa 3 mobile crane fitted with a fast reversing gearbox was also shown. This model has been developed primarily for use on dock sides and similar applications, enabling the reverse travelling speeds to match the forward speeds. The cranes are manufactured by Chamberlain Industries Limited, Staffa Road, Leyton, London, E.10.

COMBINED RAIL-ROAD TICKETS FOR LONDON AIRPORT.—Combined rail-road day return tickets for journeys to London Airport have been re-introduced by London Transport as from Boxing Day. The tickets are valid for the through journey from 136 Underground stations to the airport, via Hounslow West Station and bus routes 81B or 91. Similar tickets have been issued previously during the summer months only; but now the number of stations issuing these tickets has been doubled and tickets are on sale daily all the year round. The spectators' enclosure at London Airport attracts 1,000,000 visitors a year, and it is hoped to encourage more Londoners to avail themselves of it.

Wagon Marking Schemes

Practice in Europe and North America

(By a correspondent)

QUICK and accurate identification of freight wagons is vital for a proper check to be kept on wagon movements, and also to enable operating staff to ensure that the proper class of wagon is placed for loading in response to orders from traders. This necessitates the use of a wagon number, with an indication of certain technical and operating features.

British Railways

The more commonly used wagons of British Railways, such as the normal 12-ton high-sided open wagon, standard mineral wagons (both hopper and other), and the 12-ton covered van, do not bear, besides the wagon number, any specific indication of type by means of letter or other code; operating staff are considered to be sufficiently familiar with these wagons to obviate the risk of mistakes. More uncommon types such as banana vans, insulated fish vans, tube wagons, bogie-bolster wagons, shock-absorbing wagons, pallet vans, bulk grain wagons, and so on, do carry an indication of type, this being shown either in full or in abbreviated form on the side of the wagon. Thus, banana vans carry the word "banana" on the side, and shock-absorbing wagons are indicated by the word "shock," whilst insulated fish vans bear the sign "insul-fish." This indication normally appears close to the wagon number.

Special distinguishing marks are found on certain wagons which incorporate an unusual feature. Wagons with an end door are marked with a diagonal white line on the wagon side at the end where the door is located. Three vertical white lines on both the sides and ends of a wagon indicate that it is a shock-absorbing wagon; this is additional to the word "shock" to which reference has already been made. It is also the general practice to show on all British Railways' wagons tare weight, maximum load, and certain details regarding working restrictions, inspection, and maintenance.

R.I.V. Requirements

Under the terms of the R.I.V., the regulations of the (European) International Wagon Union, certain markings are obligatory on railway wagons used in international traffic in Europe. These wagons must show inter alia the designation of the railway to which the wagon belongs, the serial number, tare, maximum load, cubic capacity or floor area in certain cases, information regarding inspection and lubrication, the wheel base and the type of brake.

Although there are obligatory signs for a limited number of indications (e.g. [P] for privately-owned wagons and a special sign for brake equipment), and optional standard symbols for tare, maximum load, floor area, capacity and usable length, there is no internationally agreed coding to denote types of wagon; each continental railway administration has its own code letters or other method. This is contrary to the procedure with passenger stock, as the regulations of the R.I.C., the corresponding body concerned with passenger coaches and vans, as to international movement of coaching stock, include a series of symbols which have been agreed to indicate different types of stock.

Letter Code on S.N.C.F.

Typical of the letter codes used by most continental European railways is the system in operation on the French National Railways (S.N.C.F.). This indicates the general type of the wagon and certain special features. The general type is indicated by a letter in block capitals, the most usual of these being as follows:

"Régime accéleré" traffic: E, covered wagons; F, covered for perishable produce; G, parcels vans.

"Régime ordinaire" traffic: L, covered; M, brakevans; N, flats of less than 9-metre floor length; Q, flats of 9- to 15-metre floor length; R, flats of more than 15-metre floor length; T, high-sided open.

Special wagon types are denoted by a two-letter code. For *régime accéleré* all such wagons have as the first of their letters a capital H, whilst the corresponding first letter for *régime ordinaire* special type wagons is a capital S. These letters are followed by other letters indicating specific types; thus the symbols representing a *régime ordinaire* tank wagon are SC. The sign [P] close to the wagon number indicates that the wagon is on private hire, this being similar to the sign for privately-owned wagons used under the R.I.V.

These general-type code letters are also used to give an indication of carrying capacity. Where the letter only appears once, the wagon has a load-carrying capacity of between 10 and 20 *tonnes;* for wagons with a load-carrying capacity of 20 *tonnes* and over, the capital letter is shown twice. Thus, LL would indicate a covered wagon in *régime ordinaire* traffic able to carry a load of at least 20 *tonnes.*

In addition, certain other letters in italics are used by the S.N.C.F. to indicate special features. The most important of these are: *b*, tare weight over 20 *tonnes; f*, handbrake in an enclosed compartment; *o*, side flaps the length of the wagon; *u*, wheelbase greater than 3·75 metres; *w*, Westinghouse brake, adaptable type; *y*, bogie wagon.

Mention should also be made of the letter *z*, the inclusion of which indicates that a feature usually found on the type of wagon in question has been omitted.

These italic letters are used in conjunction with the general type code letters; thus LL*uw* would indicate a covered wagon used in *régime ordinaire* traffic, having a capacity of at least 20 *tonnes*, a wheel base exceeding 3·75 metres and being fitted with adaptable Westinghouse brake apparatus. T*wyf* would represent a *régime ordinaire* high-sided open bogie wagon, able to carry a load of more than 20 *tonnes* and fitted with both adaptable Westinghouse brake and a handbrake.

Certain other non-obligatory signs will also be found in some some cases on S.N.C.F. wagons, but these are normally concerned with working restrictions.

Number Code in Germany

The prewar German State Railway, and the railways of Western Germany until 1951, used to employ a letter code for indicating the general type of wagons, but in that year the German Federal Railway (D.B.) adopted a completely new and novel scheme for the numbering and marking of its wagons. This scheme involved the use of six-figure numbers to cover the stock of some 270,000 freight wagons of all types, the first digit giving an indication of the general type and, in some cases, the capacity of the wagon.

In Germany, freight wagons have for many years been scheduled in lettered groups. Group G and its subdivisions include all the standard types of covered wagon, and under the new scheme this group was allocated the digits 1 and 2, the numbers of those of up to 15-ton capacity commencing with 1 and those with a carrying capacity of 20 tons or more all bearing numbers commencing with 2. Groups T, V, and K with subdivisions comprise various special types of covered wagon, the K type being fitted with an opening roof; wagons in these groups all commence with the digit 3.

Wagons coming within the standard categories of open wagon are very numerous; these are all included in Group 0 or subdivisions of Group 0, and for the purpose of the numbering scheme they have been divided into three sections. Group O wagons with a carrying capacity of 15 tons bear numbers commencing with 6, those with a carrying capacity of 20 tons numbers beginning with 7, and those with a carrying capacity of more than 20 tons numbers commencing with 8.

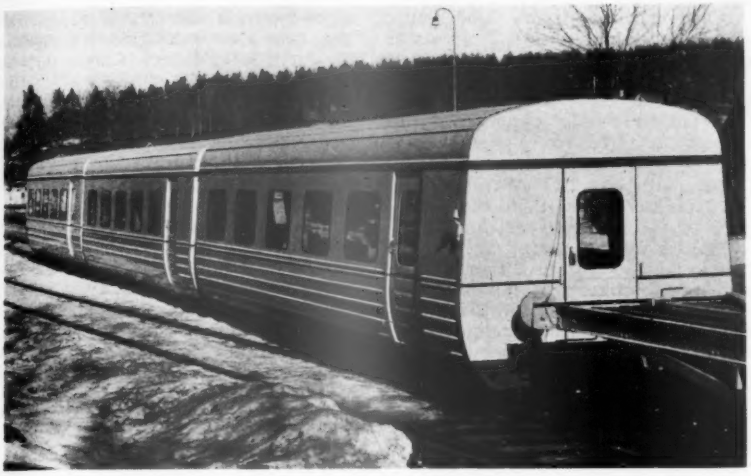
Amongst the more specialised types of open wagon, low-sided wagons with stanchions (Group R) and non-tipping works wagons (Group X) all have num-

(*Continued on page* 19)

Swedish Lightweight Train

KLL prototype 1,020-h.p. seven-coach set with unusual features

By S. H. Bingham, O.B.E., M.Cons.E., M.I.Mech.E., LL.D.



The smooth exterior and low weight of the KLL train can be seen in this illustration

IN an attempt to arrest, by developing a new type of passenger train, decrease in the passenger revenue of the Swedish State Railways, caused by competition from the private motorcar, aeroplane, and bus, the KLL train has been designed and built. The Swedish company, A.B. Svenska Järnvägsverkstäderna (A.S.J.), of Linköping, was responsible for the design and construction of the train, which incorporates such features as light weight, low centre of gravity, and high running speed. The title KLL is derived from the three Swedish words meaning short, low, and light, which describe the chief characteristics.

The train is hauled by a diesel-hydraulic locomotive, designed to suit the power requirements of the set of four-wheel lightweight coaches. The number of these vehicles may be varied; in the case of the first train to be built there are seven. Each coach, which has a specially designed coupling bogie arrangement, is about one-half the length of a standard Swedish State passenger coach.

In developing this design, existing rolling stock, both motive power and coaches, was studied. The object was to appraise the values of weight, size, capacity, and the related factors of strength, stability, and safety, in association with track construction and maintenance.

It was determined that by radically modifying shapes, contours, and constructional concepts, an overall design could be effected in which safety and stability would in no way be compromised, while comfort and speed would be greatly enhanced. Besides this, maintenance of both rolling stock and road bed would be substantially reduced.

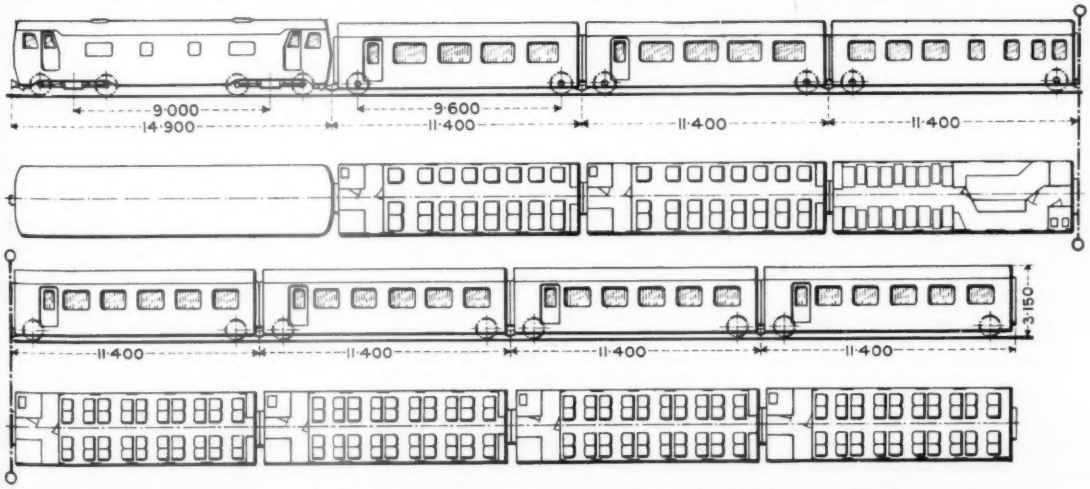
Many novel design features are incorporated in the construction of the train and it is evident that a serious effort has been made to produce a reasonably priced and efficient form of transport, to fulfil the requirements outlined above. The underlying consideration was the apparent opportunity which exists today for the railways of Sweden, and other countries, to win back passenger traffic by providing a superior and less costly travel service than that offered by alternative means of transport.

Coach Layout

A length of 37 ft. 6 in. has been selected. Provision was made for either 24 or 40 seats, depending upon the interior layout arrangement as can be seen from the plan on this page. For structural strength, the short length selected made possible the use of a tubular design with the lowest possible centre of gravity. Also, the short design requires smaller floor area during fabrication; therefore more units per given area can be produced, thus facilitating mass production techniques, which in turn could mean lower manufacturing prices.

Safety

Steel was used throughout. The roof, ends, sides, and underside were made up in spot-welded units; these were then riveted together. This facilitates construction and simplifies repairs and replacements. The complete coach body is a unit of tubular section having a smooth underside free from projections



Arrangement of KLL prototype seven-coach train and 1,020-h.p. locomotive

The author (left) with Mr. Erik Aspinberg, Chief Mechanical Engineer of the A.S.J. Company

as can be seen in the accompanying illustrations.

The coach is designed to take up the tensile stresses over the ends to conform with the specification requirements of the prospective railway purchaser. The complete coach end is effectively involved, thereby distributing the stresses over the largest area, and permitting a larger volume of material to take up deformation stresses.

Provision has been made to take up the stresses due to collision by means of a deformation section of sufficient length to prevent serious damage to the light superstructure and to hold acceleration forces resulting from a collision within passenger tolerance limits. This has been accomplished by designing the vestibule to function as a deformation section.

Running Gear

The short coach rides on what are essentially two axles, one at each end, resulting from a simplified truck unit. In this design the running gear-wheels, brake drums, rubber springs, torsion arm bearing, and car coupler—is fabricated with the axle into an integral unit. This arrangement is shown in Figs. 1 and 2 and the accompanying photographic illustration. The coach can, of course, be run in either direction.

Another feature is the association of the automatic coupler as a component of the axle. This design arrangement permits excellent tracking both on curves and tangent track, and is obtained by rigidly coupling together adjacent sets of running gears with the automatic central coupling. A type of bogie or truck is thus formed in which the axles are always locked parallel, and with the wheels freely rotating, a self-induced sinus motion is thus avoided. The wheels, which are 36½ in. dia., are bolted to the freely rotating hubs which allows of easy replacement. The wheels have disc brakes, which are compressed air-operated with brake pressure control and a successive release mechanism.

The discs are mounted on the inner side of each wheel, the disc being recessed into the wheel, allowing the largest possible brake radius. With this arrangement a well-balanced design is achieved, with lower specific surface thrust on the brake linings, larger brake disc area, and longer brake lining life due to effective cooling action. The two brake blocks on each wheel disc are individually operated by brake cylinders making the provision of slack adjusters unnecessary.

Because of this form of running gear, the unsprung weight has been kept to the low figure of 3,300 lb. per coach. It is anticipated that maintenance on both running gear and track will be reduced, through lower stresses in both components.

Coach Body Suspension

The coach body rests on rubber blocks at the outer ends of the axles, by means of arms which are journalled in the body and connected there with longitudinal torsion rods. This allows the running gear to turn on curves and permits lateral body flexibility. By varying the rigidity of these rubber blocks, every required spring characteristic in the body suspension can be obtained. Essentially, the overall result of the combination is the attainment of a lateral flexibility corresponding to infinitely long bolster swing links, if such a condition should be required, or found desirable. Due to the manner in which the rubber blocks function when the train rounds a curve, the running gear always describes a tangent to the curve being taken. This action can be seen in Fig 2.

Bogie or truck movement resulting from track unevenness and also high frequency vibrations transmitted from the wheels are dampened by the rubber blocks. Variations in the height of both rails are taken up by the central section of the running gear through torsional movement of the rubber block around the longitudinal shaft.

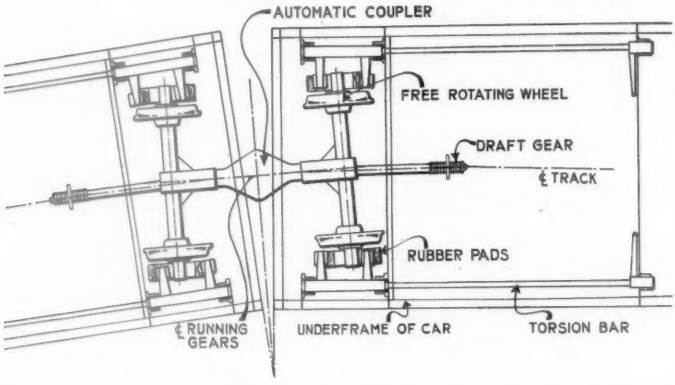
To accommodate the average platform height in Sweden the height of the coach floor has been set at 22½in., which permits rapid loading and unloading. The floor level can be built to accommodate the platform heights existing in other localities.

Locomotive

In giving consideration to the overall design characteristics of the train as a mobile unit, the relationship of coach weight to locomotive weight and horse power was carefully studied. A comprehensive design was then drafted incorporating the balance of values thus established, the projected performance level in high acceleration, deceleration, and high speed running which was considered necessary for the superior operation of a train with these features.

As a result the Diesel-Express KLL-7, the smallest KLL train, totals only 260,000 lb., including the locomotive, two first class coaches, four second class, one buffet car, and 208 passengers with baggage. The dry weight of the seven coaches is 140,000 lb. and of the locomotive, 80,000 lb.

The locomotive is rated at 1,020 h.p. but can deliver 1,200 h.p. for 5-min. periods; it is powered by two Cummins VT-12 diesel engines. Each engine drives both axles on the truck with which it is associated through the medium of a hydraulic gear with direct drive, a forward and reverse gear



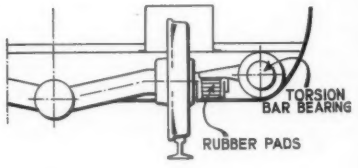


Fig. 1—(above) Cross section of KLL running gear

Fig. 2—(left) Running gears layout showing flexibility of "bogie"

mechanism being centrally located in the truck with differential and bevel gears. It is capable of speeds up to 100 m.p.h. and delivers 8·5 h.p. per long ton of loaded train, this figure including locomotive weight.

By using a commercially available high-speed low-weight diesel engine, economies in the cost were effected. The conservative ratio of locomotive horse power per long ton of loaded train, including locomotive, assures engine loadings well within their performance limits, with a resulting low maintenance factor.

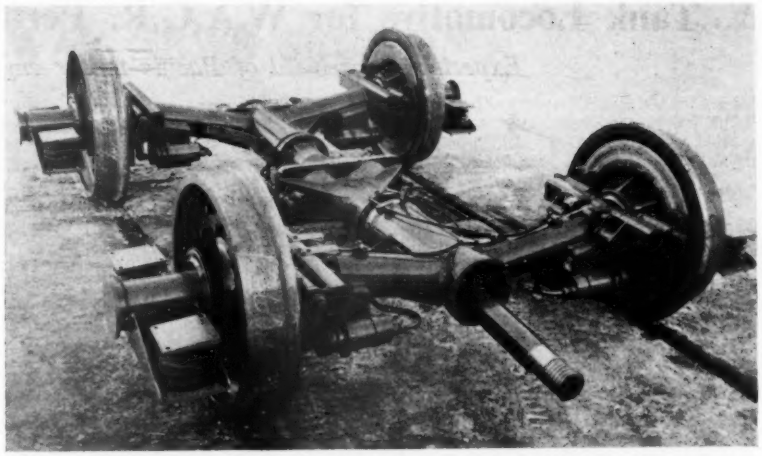
Power for train auxiliaries is obtained from two 32-kW. diesel generator sets which operate at standard Swedish electric industrial voltages and frequency, thus permitting the use of commercial type cooling fans, heater units, lighting, compressors, and so on.

A larger locomotive for use where train consists exceed seven cars is also available. This is powered by two Mercedes Benz 820-B diesel engines each rated at 700 h.p. without superchargers. With superchargers a rating of 1,000 h.p. each engine is attained.

Performance on Curves

During the trial runs it was evident that the train has the ability to negotiate curves very well. Because of its unusual tracking ability, almost complete freedom from lurch, low centre of gravity, and the restraining action of the rubber blocks previously mentioned, the train can take curves at speeds 25 to 30 per cent higher than standard trains.

To minimise air resistance, the frontal area of the KLL train is less than 100 sq. ft. and coaches have smooth, covered undersides and are free from any projecting apparatus or members. Individual coaches are close-coupled with aerodynamically-contoured vestibule diaphragms. The noise level within the cars in operation is low. By the ability of the train to reduce travel time by 25 per cent, on a conservatively estimated basis, a greater utilisation of both rolling stock and personnel is possible.



A pair of running gears coupled together showing rubber carrying pads and disc brakes

Wagon Marking Schemes

(*Concluded from page* 16)

bers beginning with the digit 4, whilst long flat wagons with stanchions (Group S and subdivisions), and flat wagons fitted with a form of turntable (Group H), carry numbers with 9 as the first digit. Privately-owned wagons all bear 5 as the first digit in their numbers, while railway-owned tank wagons and certain other special types coming within the so-called BT Group have numbers commencing with 0.

Subdivision of Main Categories

This numbering system permits of subdivision within the various categories. Thus, where several groups are included together (e.g. T, V, and K) each group can be allocated a block of numbers within the appropriate range. In the same way, an allocation of numbers can be made to subsections of any group.

The development of the system whereby the number of the wagon shows its main type has not meant the complete suppression of the letter code. The group letters still remain whilst, in addition, certain letters in small type are used to indicate specific properties and installations which cannot be shown by the numbering system. The most important of these are: *e*—electric heating; *h*—steam heating; *k*—when associated with Group G it indicates a refrigerator wagon, when with Group O a tub wagon, and with Group S useful loading length; *l*—useful loading length according to group concerned; *m*—capacity of 20 tons; *mm*—used with open wagons to show capacity over 20 tons; *p*—non-tipping wagon; *w*—loading capacity under 15 tons; *y*—high capacity wagons, the capacity varying according to the group with which used; *z*—ore-carrying wagons.

No Standard Numbers in U.S.A.

Railways in the United States and Canada have no accepted system for designating types of freight cars. Numbers are allocated by individual railways on a virtually haphazard basis, and the only certain way to ascertain the type and technical features of a car is to consult the "Official Railway Equipment Register," a voluminous document only available on a limited scale. A form of letter code was designed by the Association of American Railroads (A.A.R.) many years ago, but this has not proved adequate since the categories are too broad to be of practical use for freight car distribution, reporting or recording. Thus the letters XM apply to all box cars of whatever length, height, and capacity.

The inadequacies of the present system have given rise to many complaints from railway officers and traders, but, although there have been isolated attempts by certain railways to evolve more satisfactory methods, nothing has been done on a country-wide basis.

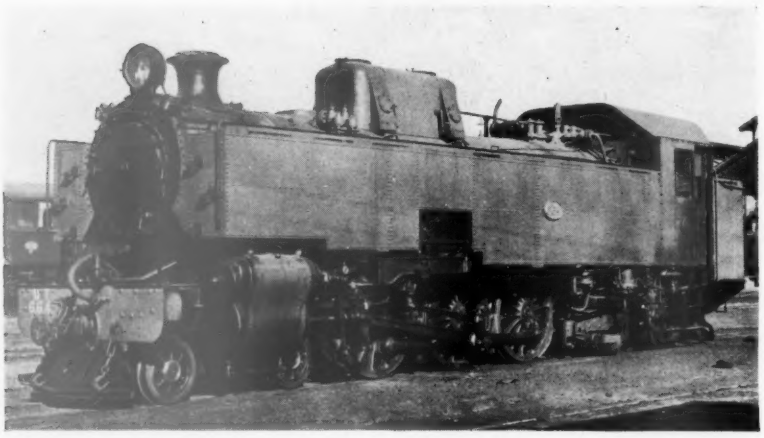
The markings found on box cars in the United States and Canada may, however, be of interest. Under regulations adopted by what is now the Mechanical Division of the A.A.R. every box car must carry certain standard markings. Initials identifying the owning railway must appear together with a serial number. If the car is privately-owned the letter X must be shown close to the railway's initials. Details of other information which must be stencilled on the car are as follow:

CAPY indicates capacity, these letters being followed by numerals showing the nominal freight load capacity of the car in lb.
LD LMT signifies the load limit in lb.
Lt WT indicates the tare weight in lb.
NEW or BLT indicates the month and year in which the car was built
EXW denotes the extreme width of the car in ft. and in.
H (level with EXW) indicates the extreme height of the car, measured from the top of the rail
EW shows the outside width of the car at the level of the eaves
H (level with EW) shows the height of the eaves, measured from the top of the rail
IL indicates the inside length
IW shows the inside width
IH shows the inside height
CU FT indicates the capacity of the car in cu. ft.

ENLARGEMENT OF SIMMS NEWCASTLE CENTRE.—Alterations occasioned by the enlargement of the Newcastle-upon-Tyne Branch of Simms Motor Units Limited have now been completed. New facilities include fuel injection and electrical repair departments. The second floor of the Branch will be available for the northern area offices and service depot of two of the Simms Group of companies, the Industrial Fan & Heater Co. Ltd. of Birmingham, and R. F. Landon & Partners Limited of Colnbrook, Bucks. The Branch address is 1, Falconer Street, Newcastle-upon-Tyne, 2; telephone no. Newcastle 23658/9.

Tank Locomotive for W.A.G.R. Perth Suburban Service

Experimental rebuild of Pacific tender engine as 4-6-4T



Class "UT" tank locomotive rebuilt for experimental suburban service

A DESIGN of locomotive which may help improve the Perth suburban service has been placed in operation recently on the Western Australian Government Railways.

The locomotive, No. UT 664, is a tank locomotive with 4-6-4 wheel arrangement. It is the result of a decision to convert a "U" class 4-6-2 tender to a tank locomotive for operation on suburban passenger trains as an experimental measure.

The work of conversion, which necessitated extension of the main frame to carry an oil bunker behind the cab, was carried out at the W.A.G.R. workshops at Midland Junction. At the same time, the locomotive boiler was given a general overhaul and converted to incorporate standard W-type boiler mountings. The trailing carrying axle was replaced by a two-axle bogie with 2-ft. 6-in. dia. wheels, and side tanks with a capacity of 2,000 gal. of water were provided.

In its rebuilt form, the locomotive retains existing cylinders, Walschaerts valve gear, and driving wheels. The boiler working pressure of 180 lb. per sq. in. is also unchanged. Consequently, the rated starting tractive effort, at 85 per cent boiler pressure, is the same as that for the "U" class locomotive, that is some 22,000 lb.

The weight in working order is 79 tons 16 cwt., which compares with 107 tons 15 cwt. for the "U" class locomotive complete with tender, or 58 tons for the locomotive alone. The total weight on the coupled wheels is 4 tons greater than in the case of the "U" class tender locomotive.

The fourteen "U" class locomotives were originally built in 1943 by the North British Locomotive Company for the Ministry of Supply for general service on the 3-ft. 6-in. gauge lines in the Sudan. These locomotives were fully described, with a diagram of principal dimensions, in our issue of September 17, 1943. As supplied to the W.A.G.R. in 1946-47, they were equipped for oil-firing. This arrangement has been retained with the rebuilt unit to enable it to remain in traffic for the operating periods required for suburban services.

Preliminary tests on the suburban system were carried out with a "U" class locomotive in July, 1956, to determine design data for the conversion. It was found that in order to enable the working of two suburban rosters without refuelling, a tank capacity of 1,000 gal. of fuel oil would be required. This has been provided in the new locomotive.

Good Performance

UT 664 ran its initial workshops trial on June 27 and commenced operation on the suburban passenger service two weeks later. During the first few days the performance of the locomotive was watched closely, and measurements were made of fuel oil and water consumption, hauling loads of up to four passenger coaches.

The engine was found to accelerate well and showed itself capable of maintaining suburban rail-car schedules without difficulty. Average fuel oil and water consumptions of 4·25 gal. per mile and 36 gal. per mile respectively were measured, giving the locomotive a maximum range of 230 miles on a bunker full of fuel oil, with the water capacity adequate for a journey of 50 miles.

Its performance to date has shown it to be an extremely useful addition to the W.A.G.R. suburban tank locomotive stock.

Principal dimensions are as follow:—

Gauge	3 ft. 6 in.
Wheel arrangement	4-6-4T
Boiler pressure	180 lb. per sq. in.
Tractive effort (at 85 per cent)	22,032 lb.
Coefficient of adhesion	4·2
Cylinder, dia.	18 in.
Cylinder, stroke	24 in.
Driving wheel, dia.	4 ft. 6 in.
Heating surface area	1,385 sq. ft.
Grate area	26 sq. ft.
Water capacity	2,000 gal.
Fuel oil capacity	1,000 gal.
Weight on coupled wheels	41¼ tons
Weight in working order	80 tons
Length over buffers	46 ft. 9¾ in.

ROTHWELL GOODS STATION.—The North Eastern Region of British Railways announces that on and from January 13, 1958, the goods station at Rothwell will be converted to an unstaffed freight siding. Approval for this measure has been given by the Transport Users' Consultative Committee for the Yorkshire area. Full loads of freight traffic requiring collection and delivery will be dealt with at Hunslet East and other full load traffic at the public delivery siding at Rothwell. "Smalls" freight traffic will be dealt with at Leeds Wellington Street.

FIRST PRODUCTION OF ALUMINIUM AT CANADIAN PLANT.—Less than 20 months after work commenced on site clearance, the first metal was poured on December 23, at the new aluminium smelter of the Canadian British Aluminium Co. Ltd. at Baie Comeau in the Province of Quebec on the north shore of the St. Lawrence River. The company is a subsidiary of the British Aluminium Co. Ltd., and has been formed in partnership with one of Canada's largest pulp and paper companies, the Quebec North Shore Paper Company. Several British firms supplied equipment and materials for the £50,000,000 plant, including British Thomson-Houston Co. Ltd., rectifying equipment; English Electric Co. Ltd., transformers; and British Insulated Callender's Cables Limited, power cables.

SABOTAGE ON C.P.R. TRACKS.—The tracks of the Canadian Pacific Kettle Valley line at two points—a gas pipeline, and two power poles were damaged in a series of recent dynamitings in the Kootenay country in British Columbia. The authorities have refused to comment on the possibility that a new wave of terrorism by the Sons of Freedom (Doukhobors) is starting, as it has often done at this time of year.

MECHANISATION OF TICKET ISSUING AT CHIPPENHAM AND CAERPHILLY.—Mechanisation of ticket issuing was introduced by British Railways, Western Region, at Chippenham and Caerphilly on January 1. The installation of a Multiprinter machine in the modernised booking office at Chippenham, incorporating printing plates covering some 1,200 different series of tickets, has been carried out by Westinghouse Garrard Ticket Machines Limited. The machine, which is operated by the booking clerk, in addition to printing and issuing tickets at high speed, records and totals the ticket transactions as they arise. At Caerphilly a Flexiprinter machine has been installed by the same company, which prints the tickets, including season tickets, on blank cards.

RAILWAY NEWS SECTION

PERSONAL

King Baudouin of the Belgians has been pleased to confer on Mr. C. P. Hopkins, General Manager of the Southern Region of British Railways, the decoration of Chevalier of the Order of Leopold.

Mr. Sydney George Hearn, O.B.E., M.Inst.T., Chief Operating Superintendent, Western Region, British Railways, who, as recorded in our December 20 issue, has been appointed Assistant General Manager (Traffic), Eastern Region, with effect from January 1, joined the Great Western Railway in the Plymouth Division in 1911. After four years of service with H.M. Forces during the 1914-18 war, he was nominated, in 1921, for special training, being the first Traffic Department candidate so selected. He gained further experience in the Goods, Traffic, Locomotive Running, Signal, and South Wales Docks departments, following which he was engaged on special duties in the offices of the Genera lManager and Superintendent of the Line. He was appointed as junior assistant to the Divisional Superintendent, Newport, in 1930; Chief Clerk to the Divisional Superintendent, Worcester, in 1933; Assistant Divisional Superintendent, Newport, in 1936; Divisional Superintendent, Gloucester, in 1939; Assistant to the Superintendent of the Line in 1940, Operating Assistant in 1941, and Principal Assistant in 1945. In 1946 he became Assistant Superintendent of the Line, which position was re-designated Assistant Operating Superintendent, Western Region, in October, 1948. In May, 1951, he was appointed to the London Midland Region as Operating Superintendent, an office later re-designated Chief Operating Superintendent, and, at the special request of the British Transport Commission, returned to the Western Region as Chief Operating Superintendent in January, 1956. Mr. Hearn was made a member of the Council of the Institute of Transport in 1945 and was a member of the Committee of the Metropolitan Section of the Institute from 1953 until 1956 when he was elected Vice-Chairman of the Metropolitan Section. In the New Year's Honours List of January, 1948, he was appointed an Officer of the Order of the British Empire. In 1950 he was selected by the Railway Executive to visit the U.S.A. as Operating Member of a party studying railway working conditions under the auspices of the Organisation for European Economic Co-operation. He has also been a member of Operating Study Groups selected to visit France. Mr. Hearn is a Lieutenant-Colonel in the Engineering & Railway Staff Corps, R.E. (T.A.).

Mr. S. G. Hearn
Appointed Assistant General Manager (Traffic), Eastern Region

Mr. J. P. Young
Appointed Scottish Divisional Manager, British Road Services

Mr. F. Donachy, a member of the General Council of the Scottish T.U.C. since 1949 and President of that body for 1956-57, has been appointed a Member of the Scottish Area Board of the British Transport Commission, with effect from January 1, 1958.

In our December 20 issue we stated that M. Louis Armand, President of the S.N.C.F., is a Commander of the Legion of Honour. This was incorrect. Mr. Armand is now a Grand Officier of that order.

Mr. J. P. Young, who, as recorded in our December 6 issue, has been appointed Scottish Divisional Manager of British Road Services, was educated at Paisley Grammar School. He began his transport career with Gow, Harrison & Co., Shipowners, Glasgow, in 1925. In 1935 he joined Youngs' Bus Service Limited, Paisley, and, the following year, became Manager in charge of vehicles and traffic for Youngs' Express Deliveries Limited. From 1940 he was responsible for the English depots of the company. In October, 1949, Mr. Young was appointed Glasgow District Manager, British Road Services, and following re-organisation, became Southern Scotland District Manager in May, 1955. He is a Member of the Institute of Transport and a committee member of the Scottish section.

Mr. J. B. Hastie, O.B.E., Scottish Divisional Manager of British Road Services since the inception of that body in 1948, who, as recorded in our December 6 issue, is retiring at the end of the year, began his transport career in 1906. In that year he became a shipping clerk with Inkster Dunn & Co., Shipbrokers, Grangemouth, and from 1910 to 1914 he was cashier and book-

Mr. E. Halder
Dock Superintendent, Middlesbrough, B.T.C., 1948-57

Mr. J. A. Lacey
Appointed Dock Superintendent, Middlesbrough, B.T.C.

The late Mr. C. H. Slater
Civil Engineer, Great Northern Railway (Ireland), 1939-54

keeper for John Barrie, Haulage Contractor, Glasgow. After war service from 1914 to 1919 he became Managing Director of the Glasgow Hiring Co. Ltd., a business then mainly a horse transport concern but which by 1939 had more than a hundred "A" licensed vehicles. In 1941 Mr. Hastie was concerned with the introduction of the Glasgow Dock Cartage Control Limited and served as a director until its functions were absorbed by the Road Haulage Organisation. In 1942 he was released to become Divisional Road Haulage Officer for Scotland, and, in July, 1948, he assumed his present appointment of Divisional Manager, British Road Services. For his services in the Road Haulage Organisation, Mr. Hastie was awarded the O.B.E. He is a Member of the Institute of Transport (and was Chairman of the Scottish Section for 1951-52), a Burgess of the City of Glasgow, a Member of the Incorporation of Maltmen and a Member of the Incorporation of Wrights.

Mr. E. Halder, M.B.E., Docks Superintendent, Middlesbrough, British Transport Commission, who, as recorded in our November 22 issue, retired on December 31, 1957, began his transport career on the former North Eastern Railway in June, 1910. Until 1914 he served at country stations and in the Passenger Manager's Rates & Fares Office and, in September of that year and until April, 1919, he served in H.M. Forces with the 17th Northumbrian Fusiliers, North Eastern Railway Battalion. In 1922 he became a Traffic Aprentice and, in 1924, Shipping Clerk in the District Goods & Docks Manager's Office at West Hartlepool. In 1928 he was appointed Assistant Yardmaster, West Hartlepool; in 1933, Assistant Dock Agent, Victoria Dock, Hull; in 1936, Dock Agent, Victoria Dock; in 1937, Dock Agent, King George Dock; in 1942, Assistant Dock Superintendent, Eastern Docks; in 1945, Dock Superintendent, St. Andrews Dock, Hull; and, in May, 1948, Dock Superintendent, Middlesbrough, the position from which he has now retired. In addition to acting as Deputy to the Middlesbrough and Hartlepools Docks Manager, Mr. Halder has been Chairman of Area Councils Nos. 1 and 2 (British Transport Docks), a member of the National Council and North East Coast Group Executive Committee of the Port Employers' Association, a member of the Area Dock Labour Board and Secretary of the Middlesbrough Port Operations Panel. He has played a leading part in developing the educational facilities fostered by British Transport Docks and for a number of years has been a lecturer under the Dock Workers' Education Scheme.

Mr. J. A. Lacey, Assistant to the Docks Manager, Middlesbrough & Hartlepools Docks, British Transport Commission, who has succeeded Mr. E. Halder as Dock Superintendent, Middlesbrough, began his career as a clerk at Shirebrook North on June 18, 1934. He served at Skegness, Chadwell Heath, Brentwood, Grimsby, and Bolsover before he joined H.M. Forces in 1939. He served in an R.E. Field Company with the B.E.F. and bomb disposal units before being commissioned into R.E. (Transportation). On demobilisation he was a Staff Captain with the Directorate of Transportation, Burma. He was demobilised on April 14, 1946, and was subsequently employed in the Lincoln area attached to the District Goods & Passenger Manager's Office. Mr. Lacey passed the Traffic Apprentice Examination in 1946 and took up his training as from January 1, 1947, at Hull and York. In August, 1948, he was appointed to special duties in the office of the Sunderland District Superintendent. In 1949 he was transferred to the Traffic Section, Chief Docks Manager's Office, Hull, in 1951 he became Head of Traffic & Works Section, in 1955 Dock Agent, Victoria Dock, Hull, and on June 4, 1956, Assistant to the Docks Manager, Middlesbrough & Hartlepools Docks, the position he now vacates.

Mr. A. E. Marriott, District Goods Manager (London City), Eastern Region, British Railways, retired on December 31 after more than 42 years of service.

Mr. Maurice Vignon, who is retiring from his position as Agent General of the French Government Tourist Office in London, was presented with a small token of esteem at Victoria on December 31 by Mr. R. E. Sinfield, Shipping & Continental Manager, Southern Region, British Railways. Mr. Sinfield was supported by Sir John Elliot and Messrs. R. H. Hacker, C. P. Hopkins, H. J. Bourn, and F. D. Y. Faulkner.

We regret to record the death on December 13 of Mr. Charles Howard Slater, M.C., M.I.C.E., M.I.Struct.E., Civil Engineer, Great Northern Railway Board, Northern Ireland, from 1939 to 1954. Mr. Slater began his engineering career with A. Handyside & Company, bridge and structural engineers, Derby. In 1910 he joined the Great Northern Railway (Ireland) as Steelwork Assistant to the Chief Engineer and, in 1924, became Chief Assistant. During this period the majority of the more important bridges on the system were reconstructed and Mr. Slater under the Chief Engineer was responsible for their design and erection. He also assisted Mr. G. B. Howden in the reconstruction of the Boyne Viaduct at Drogheda. During the 1914-18 war he served with the Royal Irish Rifles (Pioneer) Battalion in France and Belgium and, later, with the Air Ministry. He was awarded the Military Cross and was demobilised with the rank of captain. He was appointed Civil Engineer of the Great Northern Railway (Ireland) in March, 1939, and retired in March, 1954.

The following appointments have been announced by the British Transport Commission:—

General Staff of the Commission

Mr. J. C. L. Palmer, Senior Executive Assistant, Recruitment & Training Officer's Department, London Transport Executive, to be Education Officer, Training & Education Division, Manpower Adviser's Department.

Mr. E. H. Hopper, Assistant (Training & Education), B.T.C. Headquarters, to be Training Officer, Training & Education Division, Manpower Adviser's Department.

Central Services of the Commission

Mr. F. G. Manning, Assistant Director, General Matters, Funds & General Division, Finance Department, to be Contracts Officer, Contracts Department.

British Railways Central Staff

Mr. H. L. Butler, Technical Assistant, to be Assistant Mechanical Engineer, Mechanical Engineering Department.

The following appointments have been announced by the Southern Region of British Railways:—

Chief Civil Engineer's Department

Mr. A. M. Sowden, Assistant to District Engineer, Woking, to be Assistant District Engineer, Brighton.

Chief Commercial Manager's Department

Mr. A. R. D. Burns, Goods Agent, Hastings, to be Assistant District Goods Manager, London Bridge.

Mr. W. G. Coward, Assistant to District Traffic Superintendent, Exeter, to be Traffic Development Officer, District Traffic Superintendent's Office, Woking.

Chief Commercial Manager's and Chief Operating Superintendent's Departments

Mr. G. O. Corney, Assistant to District Traffic Superintendent, Orpington, to be Assistant District Traffic Superintendent, Southampton Central.

Regional Establishment & Staff Department

Mr. C. H. Titchener, Assistant (Organisation & Methods), to be Organisation & Methods Officer (Re-designation).

Mr. A. Philip, District Operating Superintendent, Glasgow (North), Scottish Region, British Railways, has been appointed Assistant Regional Establishment & Staff Officer of that Region.

Mr. John Donovan, C.B.E., Member of the Management Board, British Transport Docks, has relinquished that appointment after 10 years of service with the B.T.C. while remaining available in a consultative capacity until March 31, 1958. Mr. Donovan was formerly National Secretary, Docks Group, of the Transport & General Workers' Union and relinquished that appointment when in 1947 he accepted the invitation of the Minister of Transport to become a Member of the Docks & Inland Waterways Executive, with special responsibilities for staff and labour matters. When separate Management Boards for British Transport Docks and British Transport Waterways were formed in January, 1955, Mr. Donovan was appointed a Member of the former and took part in the administration of the 26 statutory dock undertakings in their charge. Among his outstanding services while with the Commission has been the development of educational and training facilities for the staff employed in the docks.

Mr. A. E. Poole, Freight Agent, Liverpool, Canadian Pacific Railway, has retired. He has been succeeded by Mr. E. C. Clement.

Mr. B. W. Roberts, Vice-President, Purchases & Stores, Canadian Pacific Railway, has retired. He has been succeeded by Mr. Hugh P. Millar, Manager, Purchases & Stores.

Mr. C. E. Jefferson, Vice-President of Traffic, Canadian Pacific Railway, has retired. He has been succeeded by Mr. George F. Buckingham, General Traffic Manager.

Mr. Charles D. Edsforth has been appointed General Traffic Manager of the Canadian Pacific Railway and Mr. James M. Roberts, Assistant to the General Traffic Manager for the past nine months, succeeds him as Assistant General Traffic Manager.

Mr. George A. Smyth, Superintendent of Pensions & Staff Registrar of the Canadian Pacific Railway since 1948, has retired after 44 years of service with the company. He will be succeeded by Mr. T. E. Brady of Montreal. Mr. F. D. Turner, also of Montreal, becomes Assistant Superintendent of Pensions.

Mr. John G. Hockman has been appointed Assistant Manager, Office Services, Canadian National Railways. Mr. Hockman, who was born in England, has lived in Montreal for the past seven years. He is a Cambridge graduate, and has served with I.C.I. and Steinberg's Limited.

Mr. Charles F. Cleaver has retired from the boards of A.C.V. Sales Limited and British United Traction Limited after 34 years of total service with the A.C.V. Group.

We regret to record the death on December 20, at the age of 71, of Mr. G. H. Fletcher, O.B.E., M.I.Mech.E., M.I.E.E., M.Amer.I.E.E. At the time of his death Mr. Fletcher was Consulting Engineer to the Traction Department of the General Electric Co. Ltd., a position he took up three years ago. He was also in the course of giving the Faraday Lectures—see editorial and personal section of our November 29 issue.

We regret to record the death, on December 15, of Mr. Trevor M. Wood, Technical Sales Manager of Tyer & Co. Ltd. since 1953 and formerly of the L.M.S.R. and London Midland Region of British Railways. Mr. Wood began his career in railway signalling in 1928 as a Laboratory Assistant in the Telegraph Department of the L.M.S.R. at Derby. He later became a Technical Assistant at Euston Headquarters and, from 1948, he served as Testing Assistant in which capacity he made many contacts with railway signalling contractors. In 1953 he took up an appointment with Tyer & Co. Ltd., and was later made Technical Sales Manager, which position he held at the time of his decease. Mr. Wood was an Associate Member of the Institute of Railway Signal Engineers.

Mr. J. R. Greenwood, Jnr., General Works Manager, Craven Bros. (Manchester) Ltd., has been appointed a director of that company.

Dr. W. D. Scott has been appointed Assistant Managing Director of B.T.R. Industries Limited.

Air Vice-Marshal G. M. C. Spencer has been appointed to the technical liaison staff of William Jessop & Sons Ltd.

The New Year Honours List

The following is a selection of New Year Honours of transport and industrial interest:—

Knights Bachelor

Mr. G. J. R. L. d'Erlanger, Chairman, British Overseas Airways Corporation.

Mr. S. J. Harley, Chairman & Managing Director, Coventry Gauge & Tool Co. Ltd.

Mr. W. J. Worboys, Chairman, Council of Industrial Design; Director, I.C.I. Limited; Vice-President, Associated British Chemical Manufacturers.

K.C.B.

Mr. H. W. Melville, Secretary, Department of Scientific & Industrial Research.

C.B.

Mr. H. Constant, Director, National Gas Turbine Establishment, Ministry of Supply.

Mr. C. W. Evans, Under-Secretary, Ministry of Transport & Civil Aviation.

K.B.E.

Mr. N. A. Gass, Chairman, British Petroleum Co. Ltd.

C.B.E.

Mr. E. H. Ball, Managing Director, British Thomson-Houston Co. Ltd.

Mr. A. Barraclough, Office Manager, English Electric Export & Trading Co. Ltd.

Mr. Keith Granville, Commercial Director, B.O.A.C.

Mr. J. C. Jones, General Manager, Central Railway of Paraguay.

Mr. T. V. Woods, General Manager, Antofagasta-Bolivia Railway.

O.B.E.

Mr. R. Brandon, Traffic Manager, Birmingham & Midland Motor Omnibus Co. Ltd.

Mr. C. D. Bucknell, Chief Executive Officer, Ministry of Transport & Civil Aviation.

Mr. R. Dell, Signal Engineer, London Transport Executive.

Mr. W. Fraser, Joint Managing Director, Transport Development Group Limited.

Mr. A. H. J. Greenblatt, Chief Executive Officer, Export Credits Guarantee Department.

Mr. W. H. Jenkins, Transport Manager, New South Wales Government Railways.

Mr. R. A. McMahon, Secretary, British Electrical & Allied Industries Research Association.

Mr. S. H. Smith, Finance & Accounts Officer, Department of Scientific & Industrial Research.

Mr. W. Swift, Director & Deputy General Manager, Joseph Lucas Gas Turbine Equipment Limited.

Mr. A. Sykes, Technical Director, David Brown & Sons (Huddersfield) Ltd.

M.B.E.

Mr. H. Annis, Chief Inspector, Metropolitan-Vickers Electrical Co. Ltd.

Mr. J. A. Barber, Contracts Manager, J. & H. McLaren Limited.

Mr. F. M. Evans, Chief Diesel Designer, C.A.V. Limited.

Mr. E. Fletcher, Senior Accounts Assistant, British Transport Commission.

Mr. A. W. Hayes, Airport Manager, Kuala Lumpur, Malaya.

Mr. E. H. Ker, Assistant to Motive Power Superintendent, Eastern Region, British Railways.

Mr. J. K. Lightfoot, Works Superintendent, English Electric Co. Ltd.

Mr. R. C. Mathias, Regional Secretary, South Wales Transport & General Workers' Union.

Mr. I. Midderigh, Senior Engineer, Mechanical Engineering Department, Office of the Crown Agents for Oversea Governments & Administrations.

Captain R. R. Pitman, Master, ss. *St. David*, British Transport Commission.

Miss I. M. Slade, Information Officer, British Iron & Steel Research Association.

Mr. S. F. Taylor, Higher Executive Officer, Office of the Crown Agents for Oversea Governments & Administrations.

Mr. J. H. Wand, Yardmaster, Scottish Region, British Railways.

B.E.M.

Mr. S. Cole, Shedmaster, Bristol, Western Region, British Railways.

Mr. C. E. Grimmer, Chargehand Trimmer, British Road Services (Parcels) Ltd.

Mr. C. G. Jones, Turbine Blader Chargehand, W. H. Allen, Sons & Co. Ltd.

Mr. H. Jones, Foreman Electrician, Harland & Wolff Limited.

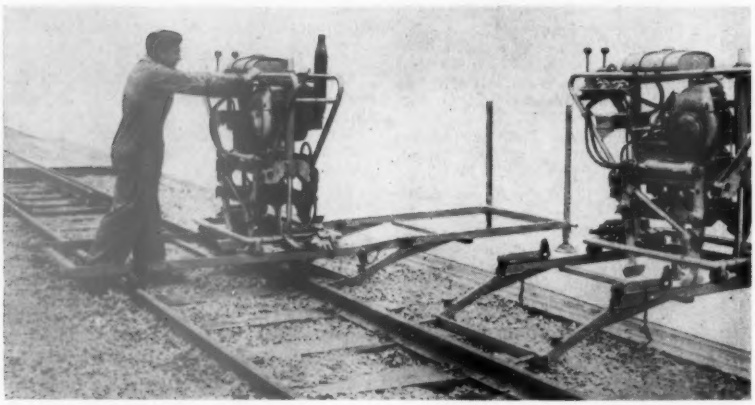
Mr. J. McEnanie, Motorman, Eastern Region, British Transport Commission.

Mr. T. L. Thompson, Foreman Fitter, Vickers-Armstrongs (Engineers) Ltd.

Mr. E. W. Tolley, Area Inspector (Class II) Templecoombe, Southern Region, British Railways.

Mr. R. Wearmouth, Works Superintendent, United Automobile Services Ltd., British Transport Commission.

NEW EQUIPMENT AND PROCESSES



Small Tamping Machine

A PROBLEM met with on routine railway maintenance, that of track posession, which can involve serious difficulties in direct proportion to the traffic density encountered, is stated to be minimised by a lightweight tamping machine. This tamper is claimed to have exceptionally rapid off-tracking facilities and has considerable manpower-saving advantages over normal hand tampers.

The manufacturer's well-known system of simultaneous vibration and compression has been incorporated in the machine. It is fitted with a self-contained petrol-engined drive and is thus independent of any outside source of supply from on-site generating sets or air compressors.

For normal two-rail tamping, the machine is equipped with two tamping units each provided with four tamping tools, mounted on a vibrating frame. An intermediate frame capable of vertical movement, is hydraulically controlled and connected to a rigid tubular steel base frame through two hydraulic cylinders. Two hydraulic control levers are fitted on the upper frame and these provide particularly easy operation for the opening and closing of the tamping tools and the raising and lowering of the vibrating and intermediate frame assembly. The rigid frame is carried on a light four-wheel trolley, which permits unit tamping beneath alternate rails when one unit only is mounted, or for off-tracking the units which can be effected in 1 min. These tamper machines are already in use in several countries including South Africa and Australia, besides the United Kingdom.

Further details may be obtained from the manufacturer, Matisa Equipment, Limited, Hanworth Lane, Chertsey, Surrey.

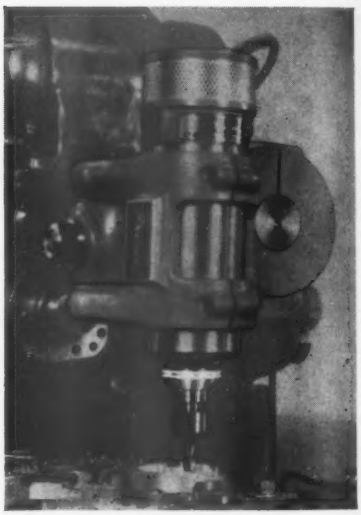
Electric Power Quill

DEVELOPED from the manufacturer's previous models, the Super 80 power quill has a power output of 1½ h.p. with a speed range of 7,000 to 25,000 r.p.m. It has applications, often in conjunction with existing machine tools; it is stated to be particularly useful for all non-ferrous high-speed milling operations with tungsten carbide cutters. In addition it is also suitable for use as precision grinding spindle, because of its accuracy and rigidity.

A continuously variable speed range between the above limits is provided by a special electric speed control unit equipped with a simple meter reading in r.p.m. This permits selection of the exact speed desired. The control is provided in addition with a master-switch, pilot light and a Fusetron cartridge for overload protection.

The power quill has a built-in filtration unit for filtering of abrasive dust from cooling air. The filtration unit is valuable for long production runs, permitting continuous operation under long working schedules.

Standard equipment includes a universal collet chuck with a capacity of ½ in. A



model with a solid quill extension is also available for wheels of ½ in. i.d. and up to 2½ in. o.d. Quill extensions of 4 in. from housing provides longer reach, suited for interior grinding operations. Specially designated mounts, either universal or plane type, permit easy mounting of the quill to larger standard machine tools such as milling machines, and so on.

The Super 80 has a one-piece steel precision ground and honed housing. The diameter of its mounting surface is 3¼ in., with a maximum diameter at the filter end of 4⅜ in. It has an overall length of 15½ in. Five grease-sealed ball bearings are fitted. The illustration shows a Super 80 quill fitted to a vertical milling machine.

Further details may be obtained from the distributor in this country, Lorant & Co. Ltd., 98-100, Croydon Road, London, S.E.20.

Soluble Cleaning De-Greaser

CHEVRON Berrilux "C" soluble degreaser can be used for cleaning heavy plant, diesel locomotive components, and so on. It is suggested that for degreasing diesel traction engines, a system widely used in the automotive sphere, of immersing whole units in a solution of the product with paraffin, could be applied.

After an overnight soaking, they are hosed down, leaving the engine in a clean state ready for dismantling. Similarly, sub-assemblies are immersed or sprayed with the non-toxic solution and on washing with water a stable and innocuous emulsion is formed.

An appreciable saving in waste and rags can be achieved by using Chevron Berrilux "C"; more important, is the labour saving by eliminating manual cleaning of greasy engines and components. This would lead to a cheaper and quicker turn round of traction units at major overhaul.

Axleboxes and springs of locomotives and rolling stock can be cleansed of accumulated oil and dirt *in situ* by spraying with the solution and hosing down. The emulsion effluent would disperse in the ballast. No rags would be used.

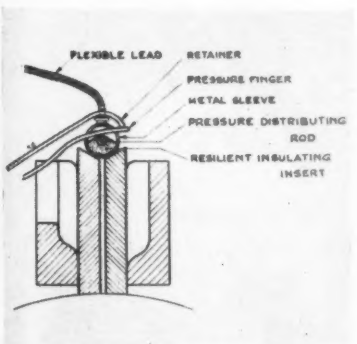
Features of the product are that it is neutral in action, will not stain or corrode non-ferrous materials, and has no unpleasant or rust-promoting fumes. It is mixed with paraffin in a proportion of 1:7; for *in situ* work it is applied evenly by brush or spray to the work face, and then swabbed or brushed down with clean water. For removing oil stains from concrete, asphalt or tiles, the product is thoroughly worked into the affected area by scrubbing, after which a liberal quantity of water is applied.

Details can be supplied by the manufacturer, Berry Wiggins & Co. Ltd., Field House, Breams Buildings, Fetter Lane, London, E.C.4.

Traction Motor Brush Holder

THE rights to manufacture brush holders to British Patent 674796 is announced. This patent covers a novel type of brush holder pressure finger, for use particularly with split brushes, and the associated brush holder. The arrangement is applicable principally to traction motors, but can be applied to any type of machine where maximum brush stability is required.

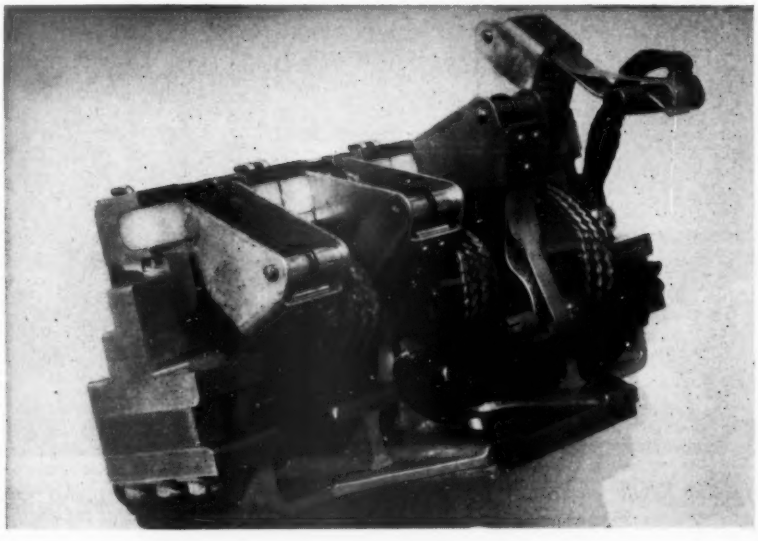
This type of brush holder has undergone extensive testing on the Swiss Federal Railways. The results have been satisfactory, and the decision was taken last year to convert the motor brush holders on all the existing locomotives to the new system. All motors ordered since that date have been fitted with the holder. Over 400 motors have now been supplied with holders of this type, or have had their holders converted.



The system is stated to offer several advantages over the types of holder hitherto regarded as traditional for railway traction motors. Particularly these are in the improved condition of the commutators resulting from its use, with corresponding decrease in maintenance costs and out-of-service time for commutator turning, and reduction in brush wear. On the 16⅔-cycle a.c. traction motors on the Swiss Federal Railways, the period between successive reconditioning of the motor commutators has increased five to ten times and brush life has been almost doubled.

The brush-holder is shown in the accompanying illustrations. One shows it diagrammatically; the right-hand view shows the holder incorporating a special pressure finger arrangement.

Full details may be obtained from the British patent holders, the Morgan Crucible Co. Ltd., Battersea, London, S.W.11.



Electric Spray Gun

THE Champion Super electric spray gun, now available in this country, has been developed to meet the requirements of a small portable spray equipment capable of giving an equivalent finish, with all types of industrial paints and lacquers, to that expected and attained by the conventional air spray.

The equipment is in use on the Swiss Federal Railways and has been ordered by the Great Northern Railway Board.

One of the advantages of the spray gun is stated to be a considerable reduction in overspray and mist. This has two functions: one is that little, if any, fume extraction equipment is needed to maintain clean air for the operator; the other is that less paint dust is deposited where it is not required, thereby reducing the necessity for masking and/or cleaning.

The unit is designed to reduce maintenance to a minimum; and spare parts can be easily replaced. The paint container is of a polythene construction which is impervious to chemicals.

Each gun is issued with three standard jets, nos. 4, 6 & 8. The purpose of these jets is to reduce the band width of coverage which is often needed when dealing with restricted surfaces.

In relation to the area covered the spray is of an annular cone formation, the maximum diameter being some 5 to 6 in., and not a flat beam as sometimes obtainable with air spray equipment.

The spray gun has a plunger-type pump operated by an electro-magnetic oscillator which works at a speed of 100 strokes per sec., developing a pressure of approximately 1,700 lb. per sq. in.

In operation, paint is drawn up on the suction stroke and compressed past a ball valve into the jet chamber. Here a secondary pressure is built up, prior to the paint being ejected through the specially constructed atomising nozzle. It weighs 3 lb. and operates from a.c. mains.

The equipment can be used for gloss enamel, undercoats, fillers, cellulose and so on, but is not suitable for spraying plastic emulsion or rubber-base paints.

The price of the Champion spray gun is £17 10s. (net). Further details, including delivery, can be obtained from S.E.C.A. Limited, 225, Westminster Bridge Road, London, S.E.1.

Compact Wiring System

THE Huckepack wiring system has a particular advantage of allowing a large number of cables to be carried in confined spaces. The basic components, manufactured from a plastic material, are interlocking allowing "tiers" of cable clips to be built up as required; only the lower section need be fastened to the baseboard. Four sizes, to suit 2, 3, 3.5, and 4 mm. dia. wire, are available.

The makers are Creators Limited, Plansel Works, Sheerwater, Woking, Surrey.

Mechanisation of Traders' Accounts in Western Region

Introduction of scheme at Bristol Temple Meads Goods Depot

Hollerith high-speed Junior tabulator with continuous stationery device in process of producing traders' accounts

An area accounting organisation, the first of its kind on British Railways, is being developed by the Commercial Department of the Western Region for the mechanisation of traders' carriage accounts. It provides for the work which is now undertaken at some 300 stations in the Region to be concentrated at four main centres.

Bristol Temple Meads goods station has been chosen for the introduction of the scheme. Alderman F. A. Parish, Member of the Western Area Board of the British Transport Commission, inaugurated it at a ceremony in the Temple Meads Goods Office on December 19, when a number of Officers of the Region, including Mr. A. C. B. Pickford, Chief Commercial Manager, and guests were present.

The Bristol scheme will be followed by others, based on Cardiff and Paddington, also on a location in the Midlands yet to be decided. It has been introduced with the fullest collaboration of the staff.

The four centres, at which a wide range of Hollerith type of equipment will be installed, will prepare accounts involving approximately 1,250,000 Western Region consignment notes in the course of a month.

Concentration of work at four specialised points justifies the introduction of a range of equipment which would not otherwise be possible. Besides preparation of accounts, the machines will enable a far greater variety of statistics related to rail carryings to be obtained, than has hitherto been possible. The schemes, which have been developed in conjunction with the British Tabulating Machine Co., Ltd., is expected to result in greater efficiency, and at less cost, than the more conventional methods in operation at present.

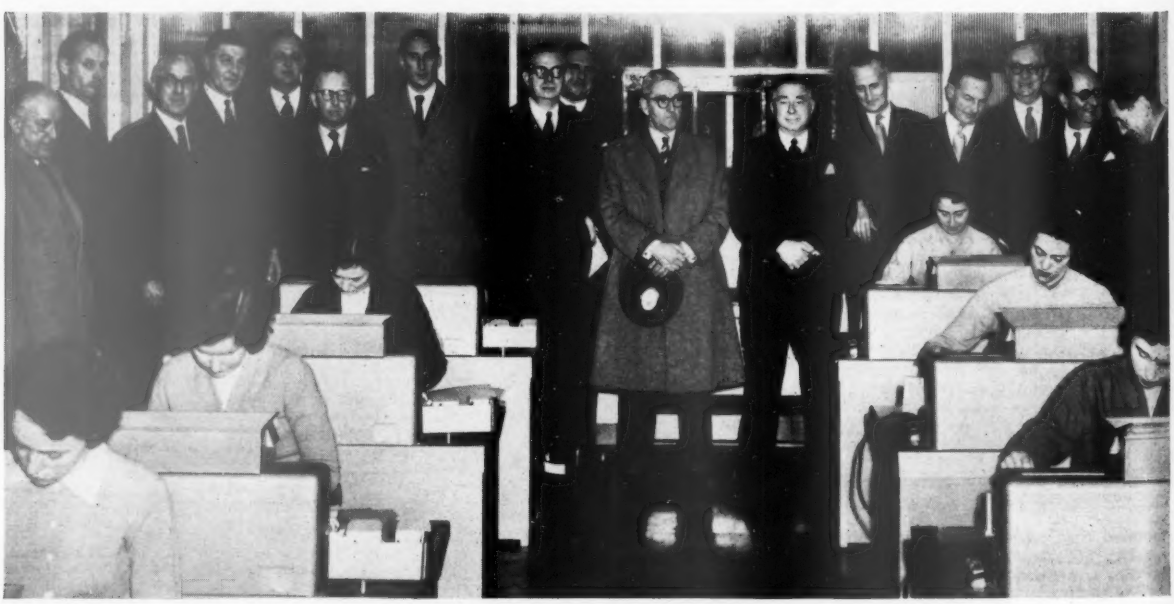
Method of Working

All consignment notes, after being checked against traffic and with charges inserted, will be passed from stations of origin to machine centres. There they will be sorted, under numerical coding, to the individual folders allocated to each trader.

From each note a card will be punched, an the acccuracy of the punching verified independently. Pre-prepared cards, punched with the name and address of each trader, will be associated with the appropriate "daily detail" cards and accounts prepared at stipulated periods.

Simultaneously, separate "summary" cards will be produced by the machines, one total for each firm's account for the period, and an independent mechanical check made of the total of these summary cards against the total of individual items recorded. The practical speed of production is about 4,000-5,000 entries an hour. The line of entry shown on the account is in skeleton form.

Accounts will be rendered four times a month and will be accompanied by the consignment notes. Before release to traders, consignment notes will, where necessary, be micro-filmed for record purposes. The practice of rendering four accounts with the final summary with the



Hollerith Keystor electrically-operated punching and verifying machines: (right) punching information from consignment notes into cards; (left) operators checking information

last rendition will, it is hoped, be to the mutual advantage of traders and British Railways.

The upper illustration on page 26 shows a Hollerith high-speed Junior Tabulator with continuous stationery device in process of producing traders' accounts. Standing by it are (left to right):

Messrs. A. C. B. Pickford; H. E. R. Bastin, District Commercial Manager, Bristol; C. J. Rider, Public Relations & Publicity Officer, Western Region; R. Robinson, Manager, British Oil & Cake Mills Ltd.; Francis Hill, Director, Charles Hill of Bristol Ltd.; R. Lyall Keens, Secretary, the Bristol Incorporated Chamber of Commerce & Shipping; C. D. C. Dickens, Home Sales Manager, British Tabulating Machine Co. Ltd.; Alderman F. A. Parish; and Mr. L. Edwards, District Operating Superintendent, Bristol.

The lower illustration shows Hollerith Keystor electrically-operated punching and verifying machines. The operators on the right are punching information from the consignment notes into the cards; those on the left are verifying information. Those standing at the back are:

Messrs. R. Lyall Keens; W. A. Blaikie, Works Manager, Allbright & Wilson Limited; A. Shoemack and G. A. V. Phillips, Assistants to Chief Commercial Manager, Western Region; H. E. R. Bastin; H. Bunting, Assistant District Commercial Manager, Bristol; Francis Hill; J. W. J. Webb, Regional Accountant; C. J. Rider; F. Fogg, General Manager, Fisons Limited; A. C. B. Pickford; Alderman F. A. Parish; Messrs. S. J. Ward, Regional Establishment & Staff Officer; C. J. Horsley, Transport Manager, J. S. Fry & Sons Ltd.; L. Edwards; and C. D. C. Dickens.

COLLISION IN ITALY.—The driver of the night express from Milan to Ventimiglia was killed and 45 passengers injured when the express ran into a stationary train near Genoa on December 22. On the same day, three people were killed near Venice when a train bound from Venice to Padua hit a motorcar at a level crossing.

GEORGE COHEN SONS & CO. LTD. NEW AGENCY.—George Cohen Sons & Co. Ltd. have announced that they are now sole agents in Great Britain for the Dorst automatic press for powder metallurgical applications. The Dorst press is a silent high-speed mechanical machine, widely used in the U.S.A. It can produce both simple components and components with complex changes of section either with tools designed for the conventional cam operated press or with tools designed on Continental principles. The press is available in a range from 10 to 100 tons pressure.

EXCEPTIONAL LOAD FROM RENFREW TO CIVITAVECCHIA.—At 9 p.m. on December 13 an unusually long consignment loaded on a 16-wheel wagon specially designed by British Railways for exceptional loads began the first stage of a journey by rail to Civitavecchia in Italy, some 1,500 miles. The load was a boiler of 8 ft. dia. and 49 ft. long, weighing 72 tons, built in Renfrew for installation in a power station at Civitavecchia. The special wagon on which it was loaded is fitted with Continental-type Westinghouse air brakes enabling the throughout journey over British lines, the Harwich-Zeebrugge train ferry and thence by Continental railways to be made without transhipment. The boiler was made by Babcock & Wilcox Limited, of Renfrew.

London Midland Region in 1957

General Manager's review of the year

Buoyant passenger business and considerable progress in the railway modernisation plan are reported by Mr. David Blee, general manager of the London Midland Region of British Railways in a review of activities in 1957.

"It has been a year of endeavour and a year of accomplishment," Mr. Blee states in a Christmas message to the staff. "Passenger trains have been accelerated and we hold the inter-Regional punctuality shield." Freight traffic results were disappointing, he admitted, but with the introduction of the new freight charges scheme and more express freight trains fitted with continuous brakes, an upward trend could be looked for and must be attained.

Work on the Manchester-Crewe electrification scheme—forerunner of main line electrification between Euston, Midlands and the North—is ahead of schedule. By mid-1958, test runs and staff training will begin on the Wilmslow-Mauldeth Road section. Diesel railcar services were introduced between Manchester and Macclesfield, Crewe and Derby (via Stoke), bringing up to 10 the number of areas served by these trains in the London Midland Region. Diesel railcars were doing more and more business and towards the end of the year were carrying 1¼ million passengers monthly—an increase of 371,000 a month compared with the previous year. In 1958 several more areas are to be served by these popular trains, including extensions in the Manchester and Birmingham districts and their introduction on some local services out of Liverpool, between Derby and Nottingham, and from Leicester. Railbuses are to be tried out on the Bedford, Northampton, and Hitchin, and the Northampton-Blisworth lines.

Diesel Traction

There are now 22 main line diesel locomotives and 185 diesel shunters working in the Region. By the end of 1958 it is expected that there will be 72 and 216 respectively. The first motive power depot to be adapted for entirely diesel operation was brought into use at Bow Devons Road, and a large diesel locomotive and railcar maintenance depot of the most modern type was completed at Crewe. Diesel railcar depots have been built at Stoke and Buxton and others are planned for Allerton, Nottingham, Newton Heath, Nuneaton and Reddish.

The locomotive works at Crewe and Derby made more progress in the changeover from steam to diesel construction. Both works are now building diesel shunting locomotives. Main-line diesel locomotives are also being built at Derby, and Horwich works are now building diesel shunting locomotives.

The year was notable for a busy programme of goods and passenger station rebuilding and modernisation. Barrow, Oldham, Chester, Flint, Willesden and Euston are instances of passenger station improvements; on the freight side schemes have been put in hand for highly-mechanised depots at Manchester and Liverpool. Others are to follow. A modernised major signalling installation was brought into use at St. Pancras in October last.

Communications between the Euston headquarters and various District Goods Managers and their stations were speeded up with the introduction of a combined teleprinter network and facsimile telegraphy "letters by wire" service. Business firms with teleprinters were later brought into this network when the service was extended and linked to the G.P.O. Telex system.

Good progress was made in the large-scale programme to provide improved amenities for staff at depots and stations. The modern amenity blocks at Llandudno and Saltley (Birmingham) which have messrooms, cloakrooms, washrooms, and drying rooms, are examples.

Staff Training

Technical schools were opened at the Derby Carriage & Wagon Works and at St. Pancras to augment those already in operation and Derby and Crewe Locomotive Works and Earlestown and Wolverton Carriage & Wagon Works.

Another important development in the London Midland Region during 1957 was a reorganisation scheme intended to speed up passenger and freight services and to encouraged a greater spirit of enthusiasm among the staff. Under the scheme, six Divisional Traffic Manager posts were created at Euston, Nottingham, Birmingham, Manchester, Liverpool and Barrow. These new officers have wide executive powers to make their own decisions on the spot without recourse to headquarters.

Staff and Labour Matters

Manning of Diesel and Electric Locomotives

Details have been published of the agreement which has now been ratified by the B.T.C., the A.S.L.E.F., and the N.U.R., on manning of diesel and electric locomotives on British Railways. Broadly, the terms of the agreement provide, as from January 1, 1958, for the manning of diesel and electric locomotives by one driver or motorman only, subject to maximum distances or periods, and to certain exceptions, between midnight and 6 a.m.

Passenger Trains

For passenger trains, including multiple-unit trains, single manning applies where the scheduled non-stop distance or non-stop running time does not exceed 100 miles or 2 hr. Diagrammed duties provide for the aggregate of scheduled train running single-manned to be limited to not more than 200 miles or 6 hr. per turn of duty.

Fast Freight Trains

On freight trains fully fitted with the vacuum brake, single manning applies where the scheduled non-stop distance or non-stop running time does not exceed 75 miles or 2 hr. Diagrammed duties provide for the aggregate of scheduled train running single-manned to be limited to not more than 150 miles or 6 hr. per turn of duty.

Night Hours

Between the hours of midnight and 6 a.m. double manning applies to trains scheduled to run during this period with the exception of trains scheduled to finish between midnight and 1 a.m. and trains scheduled to commence between 5 a.m.

and 6 a.m., which are single-manned subject to certain conditions.

The new arrangements are being introduced gradually, and progress kept under review between the railway management and the trade unions.

Redundancy

Footplate staff who may become redundant as a result of single manning will be able to take advantage of the improved redundancy arrangements recently agreed for footplate staff, under which they may be offered another post in their own grade within a reasonable distance of their home.

The Commission hopes, however, that the main weight of redundancy will be absorbed by the normal wastage of staff. A man in the footplate line of promotion at the operative date of the agreement who becomes redundant will not be dismissed from the service, except for disciplinary reasons, provided he avails himself of the then current redundancy arrangements in respect of footplate staff. Special arrangements will be made to ensure that staff displaced gain the necessary knowledge and experience of the new forms of traction to enable them to continue in the line of footplate promotion.

A form of compensation for the loss of promotional prospects will be given to established firemen who have not become established drivers after 15 or more years as firemen, by the payment to them of the appropriate driver's rate. Established cleaners at the operative date of the agreement will qualify for the benefit of this arrangement on their becoming appointed firemen.

Questions in Parliament

Capital Investment Programme

Mr. Ernest Davies (Enfield E.—Lab.) asked the Minister of Transport & Civil Aviation on December 18 which of the British Railways modernisation schemes will be postponed or delayed in completion as a result of the restrictions placed on its capital investment programme.

Mr. Harold Watkinson: It will not now be possible to accelerate by as much as was hoped the programmes for main-line diesel locomotives, for some rolling stock and for station improvements. The programme for the fitting of continuous brakes to some mineral wagons has also had to be slowed down. The Commission still hopes, however, that by maintaining and if necessary accelerating its plans in subsequent years, it will be able to complete the programme by the published date.

Mr. Davies: In view of the Government record in regard to capital investment on the railways, what chance does the Minister think the Commission will have of accelerating this scheme after 1957 for 1958 and 1959? It is not a fact that the statement now made by the Minister is in contradiction of the assurance he gave on October 30, when he said that it was not then necessary to depart from the Command Paper "Proposals for the Railways," that is, the modernisation plan?

Mr. Watkinson said the Government had devoted very large sums of money to the improvement of the railways, and over the next two years were giving the Commission £170 million each year.

Mr. Davies then asked the Minister if he would state the expenditure on its railway modernisation programme that had been planned for each of the years 1958 and 1959 by the British Transport Commission immediately before the restriction on capital expenditure for all the Commission undertakings to £170 million a year.

Mr. Watkinson: The planned programme against which restrictions were made included £151 million for railway investment in 1958 and £148 million in 1959.

Later, he said that the railways had to play their part in the national scheme of things, like everybody else, and he was quite satisfied that if they got the utmost value out of the present capital investment programme, as he was quite sure they would, the programme would be completed as planned. The facts were that what the Commission wanted to do would cost roughly £180 million each year, and they were being given £170 million a year. If the B.T.C. could not make do with £170 million, he thought it would be lacking a sense of proportion about its capital expenditure.

Members of Nationalised Boards

Mr. Ernest Davies (Enfield E.—Lab.) asked the Prime Minister on December 17 the policy and practice of H.M. Government in regard to members of nationalised boards serving on the boards of public companies.

Mr. R. A. Butler, Home Secretary & Lord Privy Seal, replying on behalf of the Prime Minister: Full-time members of nationalised boards are normally required to give up other appointments. In exceptional cases, however, they may, with the approval of the Minister concerned, hold outside directorships. Part-time members may hold outside directorships which, in the opinion of the Minister, would not be likely to prejudice the discharge of their functions as members of the nationalised boards.

Automatic Train Control

Mr. S. J. McAdden (Southend E.—C.) asked the Minister of Transport & Civil Aviation on December 18 whether he would give a general direction to the B.T.C. to give such priority to the installation of automatic train control on all British Railways main lines as will enable the time taken by the operation to be drastically reduced below the present schedule of five years; and whether he would include in the forthcoming estimates of his department a grant-in-aid to the Commission to assist it to carry out his direction.

Mr. Harold Watkinson, in a written reply: No. As the Chief Inspecting Officer of Railways said on Friday last, the Chairman of the B.T.C. has assured me that the Commission will do all it can to accelerate the provision of automatic train control and other safety measures, notwithstanding the recent restrictions on capital expenditure. The second part of the question does not therefore arise.

Scale of Railway Casualties

Mr. R. Moss (Meriden—Lab.) asked the Minister of Transport & Civil Aviation on December 20 if he would state, for the latest appropriate period, the number of persons who had suffered death, serious injury, and minor injury, respectively, on the railways of the United Kingdom.

Mr. Harold Watkinson, in a written reply: During the period January 1, 1957, to November 30, 1957, 23 persons were killed, 41 sustained serious injury, and 671 minor injury in train accidents in Great Britain.

The casualties in connection with the movement of railway vehicles, excluding train accidents, during the same period were 198 killed, 534 seriously injured, and 5,175 slightly injured. The information about casualties before this period is contained in the Chief Inspecting Officer of Railways Annual Reports to the Minister of Transport & Civil Aviation, copies of which are in the Library.

Mrs. Joyce Butler (Wood Green—Lab.) asked the Minister of Transport & Civil Aviation on December 18 if he would publish in *Hansard* the detailed items of his request to the B.T.C. in relation to the provision of car parks around suburban stations.

Mr. G. R. H. Nugent, Parliamentary Secretary: Our requests to the Commission to provide more car parks around suburban stations have been in general terms. Considerable progress has been made by the Commission, and it is now actively considering further measures.

Train and Road Accidents

Mr. A. J. Champion (Derbyshire S.E.—Lab.) asked the Minister of Transport & Civil Aviation on December 18 if he was aware that, in 1956, no passenger was killed in a train accident and that, in the same year, there were 5,367 deaths from road accidents; and if he would take steps to extend the system of public inquiry to fatal road accidents in order to ascertain the cause and propose future safeguards as with the railways.

Mr. Harold Watkinson, in a written reply: I agree that last year there were over 5,000 deaths on the road and none on the railways, but I am afraid we should not gain by adopting the proposal. All fatal road accidents are already investigated and reported on by the police. Serious accidents involving goods vehicles or public service vehicles are also investigated by officers of my Department. Under Section 23 of the Road Traffic Act of 1930 an inquiry can be ordered into any road accident, and this procedure can be adopted whenever it seems likely to produce useful results.

Parliamentary Notes

Railway Cottages in Remote Areas

The complaint of a railwayman about the conditions of his house at Strathcarron, Ross-shire, was taken up by Mr. John Macleod, M.P. for Ross & Cromarty, with the British Transport Commission. Sir Brian Robertson, the Chairman, has now written to him:—

"I have had a report about this property, and I must agree that its condition falls seriously below modern standards. It consists of a double cottage, each containing a living room with a small room adjoining on the ground floor, and an attic bedroom above. One of the cottages was vacated some time ago, and Mr. McKinnon had been allowed to occupy the living room in the empty cottage so as to provide more sleeping accommodation for his family.

"The General Manager has recently been giving a good deal of attention to improving amenities in houses in Scotland, which we inherited, many of which were in rather poor condition. He is having a prototype house built at another place in this area, and if it is satisfactory, he will sympathetically consider rebuilding the cottage at Strathcarron on similar lines. This is really the only course, as the Strathcarron building is very old, and the layout so limited in space that modernisation would be impracticable."

Contracts and Tenders

Main-line diesel-electric locomotives for British Railways

The British Transport Commission has announced that a contract has been placed with the Birmingham Railway Carriage & Wagon Co. Ltd., Smethwick, for 45 main-line Bo-Bo diesel-electric locomotives of 1,550 h.p., for use on the Kent Coast lines of the Southern Region of British Railways. They will be used mainly for hauling freight traffic, and for inter-regional passenger services which cannot be operated by electric multiple-unit trains or electric locomotives. The locomotives will have Sulzer diesel engines, manufactured in Britain by Vickers-Armstrongs, Limited, and Crompton Parkinson, Limited, electrical equipment.

South African Railways has placed an order with the South African firm, Gregg Car Co. (S.A.) Limited, on behalf of Boag & Head Wrightson (Pty.), Limited of Benoni, for 800 iron ore bogie hopper wagons to the value of £1,309,920. Delivery will commence within six months of the placing of the order, at the rate of 20 wagons a month for two months, and thereafter 80 wagons a month.

Maschinenbau Kiel A.G. (MaK), has received a repeat order from the German Federal Railways for a further 50 V60 diesel-hydraulic locomotives, and from the Deutsche Eisenbahngesellschaft, Frankfurt/Main, on behalf of five railway authorities, an order for five MaK diesel-hydraulic locomotives with outputs of 600, 650, 800, and 1,000 h.p. The Dortmunder Hafen-und Eisenbahn A.G. has ordered four further MaK standard gauge diesel-hydraulic locomotives with outputs of 600, 650, 800, and 1,000 h.p.

British Railways, Eastern Region, have placed the following contracts:—

Westinghouse Brake & Signal Co. Ltd., London, N.1: supply and installation of equipment for automatic control of primary retarders at Temple Mills new marshalling yard

R. Ridd & Son (Contractors) Ltd., Hornchurch, Essex: cleaning and painting of station buildings, goods yards, sheds, offices, signalboxes, and signals between Stratford Low Level and North Woolwich Stations, including Silvertown Tramway, Beckton Branch, Thames Wharf and Bow Creek and all loops

Taylor & Coulbeck Limited, Cleethorpes, Lincs: provision of accommodation for Signal Engineer's Department at Grimsby Town

W. & C. French Limited, Buckhurst Hill, Essex: reconstruction of superstructure (South span) and widening of overbridge No. 78 at Laindon Station

British Railways, North Eastern Region, have placed the following contracts:—

Chas. G. Inster, Alnwick: provision of bathrooms, pantries, and hot water systems in cottages 1, 2, 3, 4, and 5, Sea View Terrace, Alnwick

Fielden Electronics Limited, Manchester: control equipment and indicator panel, Thornaby Motive Power Depot

J. Scott & Company (Electrical Engineers), Newcastle: installation of electric lighting, Northallerton Motive Power Depot and Passenger Station

Turnerised Roofing Co. (Great Britain) Ltd., London: "Turnerising" roof, Gateshead Traffic Stores

T. W. Broadbent & Son Ltd., Huddersfield: installation of electric lighting, Royston Motive Power Depot.

British Railways, Scottish Region, have placed the following contracts:—

The Cementation Co. Ltd., Glasgow: strengthening of bridge superstructures—Kincardine Generating Station; Bogside Station and Lundin Road

R. M. Gibson & Co. Ltd., Glasgow: drainage and concreting of shed roads—Larkfield Carriage Sheds

Whatlings Limited, Dunfermline: reconstruction of sub-structure—Cambus Viaduct

Wm. Allan Smith & Co. Ltd., Edinburgh: electric lighting—connecting lines Slateford/Craiglockhart

James Miller & Partners Ltd., Edinburgh: erection of main office building, signalboxes and sundry buildings—connecting lines Slateford/Craiglockhart

John Drysdale & Co. Ltd., Glasgow: remedial work to ramp jetty and pierhead—Stranraer Harbour

The Special Register Information Service, Export Services Branch, Board of Trade, has received calls for tenders as follow:—

From South Africa:

Relays in accordance with S.A.R. specification CSE. 28K contact equipment to be not less than 6F.2B.

100 in accordance with figure 1 of drawing CSE.Z-334.

100 in accordance with figure 2 of drawing CSE.Z-334.

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. C. 7054: Relays," should be addressed to the Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is January 17, 1958. The Board of Trade reference is ESB/30876/57.

Soleplates 80 lb. BSS, as detailed on drawing E.3019/4.

400,000 cast steel to specification CCE. 1/4-1957 (amended August, 1957)

Alternatively:

400,000 rolled steel to specification CCE. 1/20-1957 (amended August, 1957)

Alternatively:

400,000 malleable iron or spheroidal graphite iron to specification CCE. 1/32-1957 (amended August, 1957).

The issuing authority is the Stores Department, South African Railways. Bids in sealed envelopes, endorsed "Tender No. A.6938: Soleplates," should be addressed to: The Chairman of the Tender Board, P.O. Box 7784, Johannesburg. The closing date is January 10, 1958. The Board of Trade reference is ESB/30904/57.

From India:

Broad gauge sleepers, 9 ft. × 10 in. × 5 in.

Metre gauge sleepers, 6 ft. × 8 in. × 4½ in.

Special size sleepers for points and crossings

(*a*) 9 ft. × 10 in. × 6 in.
(*b*) 9 ft. × 11 in. × 6 in.
(*c*) 10 ft. × 10 in. × 6 in.
(*d*) 11 ft. × 10 in. × 6 in.
(*e*) 12 ft. × 10 in. × 6 in.
(*f*) 13 ft. × 10 in. × 6 in.
(*g*) 14 ft. × 10 in. × 6 in.
(*h*) 14 ft. × 11 in. × 6 in.
(*i*) 15 ft. × 11 in. × 6 in.
(*j*) 16 ft. × 11 in. × 6 in.
(*k*) 16 ft. × 10 in. × 6 in.

The issuing authority is the Government of India, Ministry of Railways. The tender No. is W.VI. W.S.I. Bids should be sent to the Deputy Director (Works), Ministry of Railways, Railway Board, State Entry Road, New Delhi, India. The closing date is January 3, 1958. The Board of Trade reference is ESB/30773/57.

From Portuguese East Africa:

2,138 tyres for locomotives, including rough tyres for driving and coupled wheels of locomotives, tender wheels, pony truck and bogie wheels, and for railcars.

The issuing authority is the Ports, Railways & Transport Department, Lourenço Marques. The tender No. is 8/58. A provisional deposit of Esc:125,000 must be made by tenderers. The closing date is January 17, 1958. Local representation is essential. The Board of Trade reference is ESB/30459/57.

Further details regarding the above tenders, together with photo-copies of tender documents, can be obtained from the Branch (Lacon House, Theobalds Road, W.C.1).

ASSOCIATED BRITISH ENGINEERING LIMITED.—Group profits of Associated British Engineering Limited have been substantially reduced and the 1957-58 interim dividend cut from 4 per cent to 2½ per cent. Earnings of the marine division have been maintained, but the directors have stated that group profits have been substantially curtailed as a result of losses in the automotive and industrial section.

BLACK & DECKER SWEDISH SALES CAMPAIGN.—Black & Decker Limited is launching a nation-wide sales campaign in Sweden this month to broaden the potential market for portable electric saws. During the campaign, which will last three weeks, Black & Decker sales representatives and demonstrators, working closely with the company's distributors, will cover 30 of the main towns in the north and south of Sweden.

MONORAIL INSTALLATIONS.—Mr. Murel Goodell, of Monorail Inc., Houston, Texas, has stated that there are indications of an order in the near future for a "full-fledged commercial installation." Two cities are stated to be very interested, but he did not give their names. Monorail Inc. is responsible for the "Skyway" monorail system. It is understood that Dr. Axel Wenner-Gren, who is the originator of the "Alweg" monorail system, has purchased a controlling interest in the Texas company.

Notes and News

Locomotives for Indian 3,000-V. Electrification.—The name of the station between (Calcutta) Howrah and Burdwan on the electrified section of the Eastern Railway of India is Sheoraphuli, and not as printed in error in the caption to the photograph on page 712 of our issue of December 20, 1957.

Train Collision at Doncaster Central Station.—Two passengers were slightly injured when two trains were in collision at No. 1 platform, Doncaster Central Station, on December 29. The 5.41 p.m. Leeds to Kings Cross train ran into the rear of the stationary 5.20 p.m. York to March train. There was no damage.

Special Service of Prototype "Silver" Tube Trains for Schoolboys.—A "Schoolboys' Special" is running on the London Transport Underground for eight days during the National Schoolboys' Exhibition, London. It is making seven non-stop return trips between Acton Town and Hounslow West on Mondays to Fridays between January 1 and January 10. During rush hours the train runs in ordinary passenger service. The train is either of the Metropolitan-Cammell- and Gloucester-built prototype sets at present in service on the L.T.E. Special "silver" souvenir tickets, costing 6d. for children under 14 and 1s. for adults, are on sale. The purpose of the special service is to enable schoolboys to see the prototype rolling stock at first hand and in operation.

Inauguration of Calcutta Area Electrification.—The Prime Minister of India, Mr. Jawaharlal Nehru, inaugurated on December 14 part of the 3,000-V. electrification scheme of the Eastern Railway between (Calcutta) Howrah and Burdwan, as described in our issues of November 29 and December 20, 1957. After the ceremony he went aboard the English Electric locomotive which hauled the special train on the inaugural run from Howrah to Sheoraphuli. The accompanying illustration shows the inauguration ceremony and (on right) a model of one of the 1,320-h.p. locomotives, which was presented to Mr. Nehru.

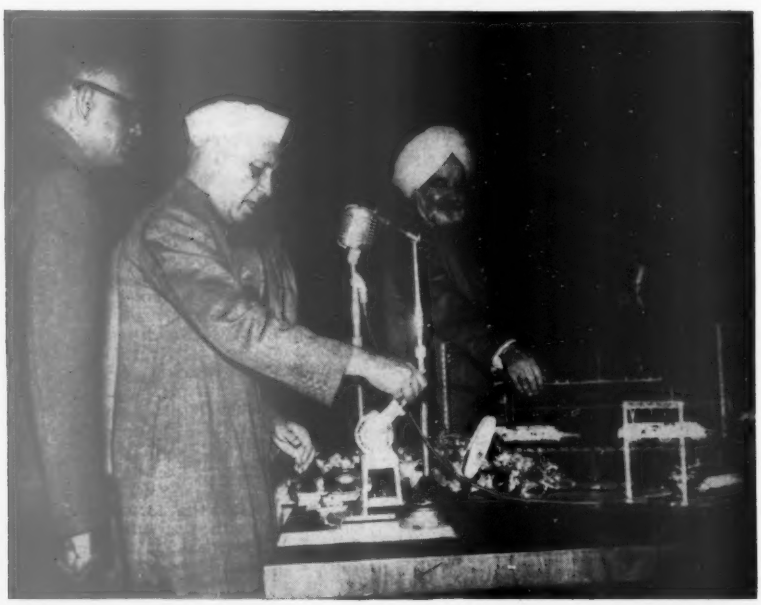
Signalman Stops Runaway Train.—A 50-wagon coal train from Godley to Partington, London Midland Region, got out of control as it approached Tiviot Dale Station, Stockport, on December 30. The crew of three jumped clear, but the driver had his foot severed by the train. The signalman in the Tiviot Dale box let the train run through the station on to a rising gradient, and it eventually stopped in Tiviot Dale Tunnel.

Lewisham Accident Inquest.—A verdict of accidental death was recorded on December 31, at the inquest at County Hall, London, on the 90 victims of the Lewisham railway crash on December 4. The jury had first returned a verdict of "accidental death due to gross negligence," but the coroner would not accept the verdict as worded. He stated that he could not record this, and told the jury foreman that the verdict must be accidental death.

Commonwealth Engineering Railcars for Malayan Railway.—The six diesel railcars ordered from the Commonwealth Engineering Co., Ltd., Granville, New South Wales, are expected to be delivered shortly. The cars are of stainless steel welded construction on the Budd principle. Of metre gauge, the length is 61 ft. 6 in., the width 9 ft. 1¼ in., the tare weight 32 tons and gross weight 35·75 tons. Each car is provided with two horizontal underfloor Rolls Royce six-cylinder engines, affording 200 h.p. at 1,800 r.p.m.; the transmission is through a twin disc torque convertor driving one axle of each bogie. Braking is Westinghouse, and electrical fittings are being supplied by J. Stone & Co., Ltd. The railcar unit operating singly at a gross weight of 35 tons will accelerate at a rate of 1·2 m.p.h. per sec. up to 30 m.p.h. on straight and level track; two railcars and one trailer operating at a gross weight of 94 tons will accelerate at the rate of 0·9 m.p.h. per sec. up to 30 m.p.h. The trailer cars to be used with the railcars are to be built in the Malayan Railway works at Sentul to the design of the Chief Mechanical Engineer and will be similar in appearance to the railcars; the bogies are being supplied by the Commonwealth Engineering Co., Ltd. The power cars will accommodate 12 second and 42 third class, and the trailers 62 third class passengers.

Christmas Decorations at Paddington.—The Christmas decorations at Paddington were designed and constructed by the department of the Public Relations & Publicity Officer, Western Region. The Crib, duplicated at the back, was built on top of the train arrival indicator control cabin. Contributions by the public to the fund for the blind are placed in the slot in the roof of the well-head.

Christmas decorations at Paddington Western Region



Mr. Jawaharlal Nehru operates the lever which put in action the Howrah-Burdwan electrification of the Eastern Railway. Mr. S. Sarangapani, General Manager of the Eastern Railway, is on the left, and Mr. Karnail Singh, Member (Engineering) of the Railway Board, on right

British Railways' Christmas Traffic.—More than 223,000 passengers are reported to have travelled from the principal London termini on Christmas Eve in 603 long-distance trains. This is more than double the number of Christmas Eve passengers who travelled from London last year, when, however, the incidence of Christmas Day was such that pre-Christmas travel was spread over several days. Over 56,000 wagons of coal were despatched from the collieries by British Railways during the 72 hr. ended 6 a.m. on December 27, the majority on Christmas Eve; this represents an increase of 9,000 wagons compared with the corresponding period last Christmas.

Metropolitan-Vickers at Schoolboys' Exhibition.—The Metropolitan-Vickers Electrical Co. Ltd. is occupying a stand at the National Schoolboys' Own Exhibition, to be held in the New Horticultural Hall, Westminster, London. The stand shows models and photographs illustrating the wide range of the company's products, and illustrating past and present achievements

by the firm. Opportunities available with the company for boys and girls who wish to train for a professional career in electrical or mechanical engineering, applied physics, chemistry or metallurgy, also are publicised. Engineers from the company's Education Department, with senior apprentices, are in attendance to discuss Metropolitan-Vickers training arrangements with boys, girls, parents, teachers and others who may be interested. Information also is available relating to the company's scholarships for university and "sandwich" courses.

Ammunition Lorry Falls on Railway Track.—An army driver and his mate escaped serious injury when their lorry, loaded with small arms ammunition, left the road at White Hill, Wylye, Wilts., recently, crashed through a fence and ran down a 30 ft. incline on to the Salisbury-Westbury line of the Southern Region. Firemen made the ammunition safe and transferred it to another vehicle. Army recovery vehicles removed the lorry after 3 hr.

The Transportation Club.—A club dinner will be held at the Transportation Club, 44, Wilton Crescent, S.W.1, on January 21, at 7 for 7.30 p.m. The guest of honour will be the Quartermaster General to the Forces, General Sir Nevil Brownjohn. The cost will be 30s. per head to include wines. Dress will be lounge suits. Members who have not paid for their seats on reservation are asked most particularly to confirm by 2.30 p.m. on January 20; otherwise they will be liable to the charge for them.

British Transport Commission Display at Schoolboys' Own Exhibition.—The British Transport Commission is featuring a large-scale display to show youngsters what a transport career can offer, at the National Schoolboys' Own Exhibition which was opened on December 31. The special two-floor stand includes on the ground floor a comprehensive working model showing British Railways trains, London Transport trains and buses, British Transport docks and waterways, and British Road Services lorries. It covers an area of 550 sq. ft. The upper floor shows apprentices from British Railways training schools at St. Pancras and Reading learning their engineering trade, beside a working model of a London underground train guard's control panel. The driver's view of the tube tunnel ahead will be seen by looking through the windows of a mock-up of a motorman's cab. Other features will include an electronic scanning indicator (B.E.S.I.), push-button working models of a canal boat lift and a dockside crane, and B.R.S. vehicles in miniature. The exhibition was opened by Sir Cecil Weir, Member of the British Transport Commission, deputising for Sir Brian Robertson, Chairman, B.T.C., who was indisposed.

Football Supporters Delay Seven Trains.—Seven special trains were held up for an hour on the Bolton-Liverpool line, London Midland Region, on December 26, when hooligans, returning to Liverpool after the Everton-Bolton football match, stopped a football excursion train on a step gradient four miles from Wigan. Some 200 youths left the train and swarmed over the track. It was eventually restarted with assistance from a train waiting behind, and on arrival at Liverpool Exchange Station many carriage windows and electric light bulbs were found to be broken.

Safety of Northern Ireland Railways.—Lord Glentoran, Minister of Commerce, stated recently in the Northern Ireland House of Commons that he had no reason to think that railway undertakings in the province did not maintain their works in a condition necessary for safe operation. He was replying to a question by Mr. W. J. Morgan who drew attention to recent serious rail accidents in Britain. He also pointed out that over 60 per cent of the railway lines in Northern Ireland were single track. Regarding the double-track lines, no arrangements had been made to introduce A.T.C.

Diesel Service on Liverpool-Gateacre-Warrington Line.—Two-car diesel trains will work the local services in the London Midland Region between Liverpool Central and Gateacre, and between Liverpool Central and Warrington from January 6. Trains will run at regular hourly intervals to and from Gateacre and similarly to and from Warrington Central, so providing a half-hourly service in each direction for stations between Liverpool Central and Hunts Cross. This is double the present services between these two points. The journey time between Liverpool and Hunts Cross will be 2¼ min. less than by steam train, and between Liverpool and Warrington 5½ min. less. The trains were built by the Gloucester Carriage & Wagon Co. Ltd.

Future of Dundalk Works.—The operation of the new Dundalk Engineering Company which will take over the Dundalk Works of the Great Northern Railway of Ireland was discussed recently between representatives of the unions with members employed in the various grades and Mr. A. P. Reynolds, chairman of the new company, in Dublin. The new company will take over on January 10.

C.I.E. Loss in 1956-57.—The report of Coras Iompair Eireann for the year ended March 31, 1957, shows that on the year's working there was a loss of £1,723,209. In the previous year the loss was £1,625,542. On the railways there was a loss of £1,013,667 compared with a loss of £1,223,222 in the previous year. Expenditure on railways amounted to £775,315 and receipts to £6,761,648. There was an increase of over £105,000 in the receipts from passengers, attributable to increased fares as the number of passengers carried actually decreased by over 7 per cent. There was an increase in other passenger train receipts of nearly £57,000 also due mainly to increased charges. The receipts from merchandise train traffic were less by over £300,000 before providing for depreciation. There was an overall reduction in the loss on railway working of more than £200,000 after making increased depreciation provisions.

Christmas Decorations at Euston Station

The main, Euston Road entrance to Euston Station, London Midland Region, during Christmastide

Opening of Great Eastern House, Cambridge

Sir Reginal Wilson, Chairman, Eastern Area Board, with Mr. W. A. G. Suddaby, Traffic Manager, Cambridge, and Mr. Norman Hamilton, Adviser on Public Relations, Eastern Region (*See our December 27 issue*)

Forthcoming Meetings

January 7 (*Tue.*).—Permanent Way Institution, Leeds & Bradford Section, in the British Railways Social & Recreation Club, Ellis Court, Leeds City North Station, at 7 p.m. Sound and colour films entitled "Colour under Control," presented by Ingham Clark & Company, of Wortley, Leeds 12. Also "Steel Road," film loaned by The United Steel Companies, Limited, Sheffield.

January 7 (*Tue.*).—South Wales & Monmouthshire & Docks Lecture & Debating Society, at the Angel Hotel, Westgate Street, Cardiff, at 6.30 p.m. Paper on "B.R.S., first decade: what next?" by Mr. J. Freeguard, Divisional Manager, Western Division, British Road Services.

January 7 (*Tue.*).—Institute of Transport, Midland Section, at the Exchange and Engineering Centre, Birmingham, at 6.30 p.m. Paper on "European transport," by Mr. C. F. Klapper.

January 8 (*Wed.*).—Permanent Way Institution, London Section, at the Headquarters of the British Transport Commission, 222, Marylebone Road, N.W.1, at 6.30 p.m. Paper on "Heavy plant," illustrated by lantern slides, by Mr. E. C. Cookson.

January 8 (*Wed.*).—British Railways (Southern Region) Lecture & Debating Society, at the Chapter House, St. Thomas' Street, London, S.E.1, at 6 p.m. Paper: "At home with the Shipping Department," by Mr. R. E. Sinfield, Continental & Shipping Manager, Southern Region.

January 8 (*Wed.*).—Institution of Railway Signal Engineers, York Section, at the Signalling School, Loft Green, York, at 5.30 p.m. Paper on "The work and problems of a district linesman," by Mr. R. F. Dean.

January 9 (*Thu.*).—British Railways (Western Region) London Lecture & Debating Society, at the Headquarters Staff Dining Club, Bishop's Bridge Road, Paddington, W.2, at 5.45 p.m. Railway quiz-questions on railway operation and administration. Questionmaster, Mr. H. G. Bowles, Assistant General Manager (Administration), Western Region.

January 10 (*Fri.*).—Institute of Transport Northern Section, at the Royal Station Hotel, Newcastle-upon-Tyne, at 7 p.m. Paper on "Transport in modern times," by Major-General G. N. Russell.

January 11 (*Sat.*).—Permanent Way Institution, East Anglia Section, at Cambridge at 2.15 p.m. Debate: "Maintenance, old v. new methods." For old methods—Messrs. G. W. Baker and H. S. Bullard. For new methods—Messrs. W. A. Sutton and A. H. Gorham.

January 11 (*Sat.*).—Railway & Canal Historical Society, at the London Transport Executive Library, 55, Broadway, London, S.W.1. Talk by Mr. Charles F. Klapper on "The Mid-Kent Line."

January 13 (*Mon.*).—Institute of Transport, at the Jarvis Hall (R.I.B.A.), 66, Portland Place, London, W.1, at 5.45 p.m. Paper on "Railway freight traffic operation in the light of railway modernisation," by Mr. C. P. Hopkins.

January 14 (*Tue.*).—Railway Correspondence & Travel Society, East Midlands Branch, at the N.C.S. Guild Room, Toll Street, Nottingham, at 7.30 p.m. Paper on "Locomotive working," by Mr. P. Bagguley.

January 15 (*Wed.*).—Institution of Railway Signal Engineers, London Section, at the Institution of Electrical Engineers, Savoy Place, London, W.C.2, at 6 p.m. "Electronic switching"—informal lecture by Mr. N. C. Smart (G.E.C. Telephone Works).

January 16 (*Thu.*).—Model Railway Club, at Caxton Hall, Westminster, S.W.1, at 7.45 p.m. Talk on "Dugald Drummond as I knew him," by Mr. S. R. Arnold.

January 17 (*Fri.*).—Railway Correspondence & Travel Society, London Branch, at the Railway Clearing House, Eversholt Street, London, N.W.1, at 7.15 p.m. Paper on "The Midland Railway's London extension," illustrated by lantern slides, by Mr. S. Summerson.

Railway Stock Market

As is usual at the beginning of the year, hopeful views tended to predominate in the City, and both British Funds and industrial shares have been inclined to strengthen in price, though in general there has been very little business passing in stock and share markets. The small amount of activity has been due in part to the widespread tendency to conserve resources for important new issues impending in the next few weeks. New issues are of course generally offered on attractive terms which make a premium reasonably certain when dealings start. Apart from the huge issues coming from Royal Dutch-Shell, Babcock & Wilcox are to raise £3,800,000 partly by an offer of debentures to shareholders and partly by a rights offer of new ordinary shares at par on the basis of one for every four held.

Foreign rails again attracted very little attention. The recent heavy fall in Antofagasta ordinary stock has failed to attract buyers, and as compared with a week ago, the price has remained at 19¼. The preference stock was 36¼, compared with 37.

Chilean Northern 5 per cent first mortgage debentures were 39½, while elsewhere, Costa Rica ordinary stock held steady at 16½ and the 6½ per cent second debentures have changed hands around 88¼. Guayaquil & Quito assented bonds were quoted at 79½.

San Paulo 3s. units have remained at 2s. 1½d., while United of Havana second income debentures were 7½. International of Central America shares kept at $18¼ and the preferred stock at $127. Brazil Railway bonds were 5½, and elsewhere, Mexican Central "A" debentures have been firm at 72.

Canadian Pacifics were a little firmer at $43¼ in sympathy with steadier Wall Street markets. The yield is now 6¼ per cent, while the 4 per cent debentures at £62½ yield almost 6¼ per cent and the yield is as much as 7¼ per cent on the 4 per cent non-cumulative preference stock now quoted at £54½. Among other securities, White Pass shares changed hands around $13¼.

Movements among shares of locomotive builders and engineers have generally not been more than a few pence, but they were mostly in favour of holders. This, however, was attributed to the rather firmer tendency in markets generally. In fact, there was little to indicate that the generous yields were bringing in buyers. Beyer Peacock 5s. shares, for instance, at 8s. yield nearly 9¼ per cent on the basis of last year's 16 per cent dividend. Charles Roberts 5s. shares, which have remained at 8s. 4½d. yield nearly 8¾ per cent, and there is a yield of nearly 12⅛ per cent on Birmingham Wagon shares at 16s. 6d.

Elsewhere, G. D. Peters, which remained very firmly held and quoted at 28s. 1½d., give only a modest yield of 5¼ per cent, which reflects the general confidence that the 7½ per cent dividend will be maintained. In view of the strong financial position it might be decided to follow a more liberal dividend policy if profits hold up well, optimists hope, which explains why the shares are valued on a moderate yield basis. Hurst Nelson were 26s. 6d. and North British Locomotive 12s. 9d., Gloucester Wagon 10s. shares 13s. 9d. and Wagon Repairs 5s. shares 13s.

Ruston & Hornsby were 23s. at which there is a yield of 7⅛ per cent on the basis of last year's 9 per cent dividend. In other directions, Ransomes & Marles 5s. shares were 9s. 9d. and show a yield of over 7¼ per cent. F. Perkins 10s. shares were 9s. 10½d. and British Timken kept at 50s. 3d.

OFFICIAL NOTICES

DESIGNER-DRAUGHTSMAN required for project work on railway rolling stock equipment. H.N.C. or equivalent qualifications is required, together with some experience in rolling-stock design office. Birmingham area.—Apply giving fullest details to Box 4157, Smith, 19/21 Corporation Street, Birmingham.

RAILWAY ENGINEER-DRAUGHTSMEN required to operate from Midlands Office. Applicants must be good instrument men capable of making accurate surveys and efficient in the design of layouts for all classes of industrial sidings. These positions carry a good salary, and are permanent and pensionable. Car and house provided. Apply in confidence giving full details of experience.—Box 489, *The Railway Gazette*, 33 Tothill Street, London, S.W.1.

THE NIGERIAN RAILWAY CORPORATION invites applications for the following post: SENIOR DRAUGHTSMAN (TRACK). *Duties:* The officer will be employed in the design and preparation of working drawings for track layouts and detailing, Railway installations, minor structures and drainage schemes. *Qualifications:* Candidates must have experience in the New Works or Permanent Way Section of a first class Railway or with a manufacturing firm which supplies Railway components. The ability to prepare Bills of Quantities for general Civil Engineering would be an advantage. *Salary:* In scale £1,150 × £50 per annum to £1,450 per annum plus £300 per annum Overseas Pay. Appointments are on contract with 20 per cent. gratuity per annum of the total pay. *Tours:* 15 months in Nigeria followed by 15 weeks' leave on full pay. *Quarters:* Partly furnished quarters are provided at low rental. *Allowances:* There are attractive family, travelling, transport and other allowances. Send postcard before 15th January, 1958, mentioning the post and this paper for further particulars and application form to:—The London Representative, Nigerian Railway Corporation, Nigeria House, 9, Northumberland Avenue, London, W.C.2.

WEST RIDING COUNTY COUNCIL. Appointment of ASSISTANT LABORATORY ENGINEER. Applications are invited for the permanent appointment in the Highways and Bridges Laboratory of an Assistant Engineer, in the Grade A.P.T. V (£1,175-£1,325). The person appointed will be in charge of the Concrete Section of the Laboratory and the duties will involve the design of mixes, routine control and testing of concrete, soil cement, precast concrete products, dry aggregates and allied materials to be used on the major motorway and trunk roads improvement programme authorised by the Ministry of Transport and Civil Aviation in the West Riding (many large and important concrete bridges are included in this programme), as well as on the normal County Road programme. The appointment is subject to the Local Government Superannuation Act, and the County Council regulations governing conditions of service, subsistence and travelling allowances. The successful candidate will be required to pass a medical examination. Application form and particulars of the appointment from the County Engineer and Surveyor, County Hall, Wakefield. When applying for form candidates should state their present position and salary. Completed applications to be returned by 20th January, 1958.

FOR SALE OR HIRE, Hudswell Clarke 0-6-0 standard gauge STEAM LOCOMOTIVE, in good condition.—Apply Eagre Construction Co. Ltd., Scunthorpe, Lincolnshire. 'Phone 4513 (7 lines).